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Secondary Lameness in the Horse.*

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When your President paid me the compliment of inviting me to read a paper before you, he suggested I should select either an equine or a canine subject.

As I was coming back, after many years' absence, to the home of the English cart horse, I thought an equine subject would be appropriate, that a paper on the very debatable topic of lameness would give rise to an interesting and instructive discussion, and that, as the subject of lameness was too large to be dealt with in the course of one paper, I might, with advantage, confine myself to one branch of it. I propose, therefore, to submit for your consideration a paper upon "Secondary Lameness of the Horse," with the secure feeling that I shall leave you to-night with my own knowledge of the subject much enriched by having the benefit of your own views and experience upon this very important branch of veterinary surgery.

I call this a very important subject advisedly, because I know of no branch of veterinary surgery which contains more pitfalls or more opportunities for the exercise of the powers of observation, skill and ripe experience than the diagnosis and treatment of lameness in the horse.

In conversation recently, a first-rate veterinary practitioner expressed the opinion that research and more research into obscure diseases was the crying need of the profession to-day, concluding by saying: "We have fathomed the diagnosis and treatment of lameness, which remains much as it was twenty years ago." With that opinion I am very loth to agree. I do not like to think that the old remedies of actual cautery, vesication and the various neurectomies are the last word in the treatment of lameness, followed by a period of rest and the abandonment as incurable of all such cases as do not respond to this stereotyped line of treatment. I prefer to think that in the treatment of lameness a distinct advance has been made by patient and persistent observers, and that orthopædic surgery, applied massage and up-to-date electrical and ray treatment are being, and will in the future be, brought more and more to bear in our efforts to restore to usefulness many cases of lameness which are only too often regarded either as incurable or as not worth treatment.

Before going any further, it will perhaps be well for me to define exactly what I mean by secondary lameness.

As a matter of interest, lameness may be secondary to a great number of morbid conditions, such as iliac thrombosis, scirrhous cord, strangles, abscesses or diseases of the liver. Also to self-inflicted injuries, such as those arising from the violent stamping of hairy-legged horses, affected by symbiotic mange, whilst ac te lameness may arise from laminitis subsequent to pneumonia or septic metritis.

Many cases of spinal (or cerebral) disease show ataxia, hemiplegia and paraplegia and often severe muscular atrophy later on. I have during the past week seen such a case in a horse affected with tuberculosis of the cervical vertebræ.

These, however, whilst undoubtedly secondary symptoms, are in the nature of primary lamenesses and it is rather with a few of the forms of lameness which arise as sequelæ to pre-existing lameness that I propose to deal in the course of this paper.

The most frequent cause of secondary lameness in the horse is, perhaps, disuse atrophy. I include, under this heading, contraction of the foot, a very common cause of secondary lameness. However, I would like to point out that either or both conditions frequently exist without any resulting lameness. Next in frequency as a cause of secondary lameness, at least in my experience, comes fibrous anchylosis. Other frequent causes are deformities of the hoof walls following inflammatory affections such as coronitis or quittor, pressure laminitis, osseous anchylosis, knee spavin following periostitis, dropped soles following laminitis, and contracted tendons. An occasional cause of secondary lameness is sandcrack at the toe in hind feet, following contracted tendons or spavin lameness.

Disuse atrophy is most commonly seen in the mass of muscles clothing the hip and shoulder, and is most frequent as a sequel to painful lameness of the "supporting leg" character, such as open navicular bursa, quittor, fractured pasterns and severe injuries to the joints and tendons.

Where the primary lameness is very intense and the animal persistently refuses to bear any weight upon the affected limb, atrophy is often shown very early and the lesions may be complicated by a breakdown of the opposite limb from continued pressure, particularly in lameness of the hind limb in heavy animals.

Contraction of the feet is often an unnoticed cause of chronic sub-acute lameness in animals affected primarily by ringbone, corns, or navicular disease. Such animals may work for months, or even years, coming out lame in the morning, the lameness being of the form usually termed "grogginess," and passing off, more or less completely, with exercise during the day's work. A few days' rest very often results in the lameness assuming an acute form, and the presence of a bony deposit is often held to account for it.

Contraction of the feet may accompany, or follow, pyramidal disease, a frequent cause of lameness in heavy horses, generally classified as low ringbone, and may greatly aggravate the resultant lameness. Many cases of this type on careful examination show a great deal of fibrous anchylosis of the pasterns or fetlocks in addition to contracted feet, the result of long-continued sub-acute

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inflammation. This is quite common in the heavy trotting vanner and was formerly very common indeed in tram and omnibus horses.

Secondary lameness from contracted feet is also seen when the feet have been mutilated by a farrier cutting away the bars when exploring a suppurating corn. It is also seen in horses the shoes of which have been left on for a very long time so that the overgrowth of the wall has resulted in atrophy of the frog from lack of pressure.

Atrophy of the muscles of the hip and thigh appears to take place very rapidly in hard working cart horses affected by acute lameness of the hind feet or joints, such as suppuration of the frog or sole from a punctured wound, acute inflammation of the hock joint or fetlock or acute sesamoiditis. In these cases the primary lameness is accentuated by the amount of weight borne by the legs and feet, with its attendant weariness. This atrophy may or may not give rise to acute lameness and care must be taken in diagnosis, as occasionally marked atrophy is seen without any resultant lameness. This is particularly noticeable in atrophy following an attack of hæmoglobinuria. I am speaking, of course, of the recoverable cases, as crural paralysis is a frequent complication in the more severe and frequently fatal attacks. The atrophy in many of these cases is very marked and I saw several such cases during my pupilage amongst the horses of the Manchester Trams. These horses were well fed and in hard condition and cases of hæmoglobinuria following short periods of rest were not uncommon.

Painful lameness may follow the formation of small callosities on the cut end of a nerve after neurectomy, necessitating a second operation, or a condition of gelatinous degeneration may follow neurectomy.

When secondary lesions, such as contraction of the hoof walls at the heels, are exhibited, the greatest care is necessary in diagnosis in order to ascertain whether or not these lesions contribute in any degree to the lameness shown by the patient. When the regions involved in the primary and secondary lesions are sufficiently remote from one another, as in the case of contraction of the foot following shoulder lameness, knee or tendon lameness, the plantar nerves may be usefully anæsthetised by cocaine to assist in differential diagnosis. I was able to apply this method successfully in the case of a hunter which had been suffering from shoulder lameness for nearly twelve months. Under treatment he had come sound three times, only to fall lame again when ridden over fences. I felt certain that my diagnosis of shoulder sprain was a correct one, but a consultant who was ultimately called in diagnosed navicular disease, pointing out that the horse's foot was contracted. He refused to accept my suggestion that a horse lame in any region for so long a period would probably show some contraction of the foot, so to decide the matter I anæsthetised the plantar nerves with cocaine. The foot was completely anæsthetised, as was proved by pricking the coronet all round with a pin, and as the horse still went lame the question of navicular disease was ruled out. This horse ultimately came "hunting sound" after a course of treatment which I will describe later.

Usually, however, the cessation of pain at the seat of the primary lameness or the alteration in the gait and action of the patient is sufficient for differential diagnosis.

In the case of fractured pastern the initial lameness should be subsiding in a month from the date of injury, and any persistent or increasing lameness at the end of that time should lead the careful practitioner to look out for secondary causes of lameness, such as muscular atrophy, fibrous or osseous anchylosis or contracted feet, pressure from overgrown horn, neglected corns, etc.

Pressure by the walls of the hoof upon the seat of operation for sub-horny quittor, or fissures at the coronet after an attack of coronitis, may cause severe lameness and it must be remembered that very often any inflammatory process set up at the coronet induces a very vigorous growth of horn, which may, from time to time, require thinning in order to relieve pressure upon sensitive structures.

Probably one of the most frequent causes of secondary lameness is the practice of turning out to grass horses which are so lame that they will not walk any father than they are compelled to do. These animals spend most of their time lying down and their lameness increases daily until such time as, in the very acute cases, they cannot stand without intense pain, lose condition very rapidly, from exhaustion and hunger, and either die or are destroyed as hopeless.

No horse should be turned out to grass which is really acutely lame, unless he is under daily supervision to see that his lameness is not so progressive as to prevent him grazing sufficiently to keep his condition and to avoid the formation of extensive bedsores from being constantly recumbent. A veterinary surgeon advising such a procedure runs a risk of being charged by the R.S.P.C.A., with procuring an owner to committ an act of cruelty. The rapidity with which the lameness arising from muscular atrophy or contracted feet develops from a sub-acute to an acute form when the patient is left to his own devices is really remarkable. When forced exercise is abandoned, finding it hurts him to move about, he probably spends whole days lying down, and the pain caused by bringing atrophied muscles into play in order to rise or by throwing his weight upon rapidly contracting or highly inflamed feet is daily accentuated. Physical rest is not necessarily physiological rest, or, in other words, mere idleness does not constitute rest when repair of injured parts is called for.

There are undoubtedly instances in which it is difficult to decide whether a lameness is primary or secondary, as in cases which exhibit two distinct causes of lameness at one time.

I saw such a case in conjunction with Professor Pritchard over thirty years ago. The patient, a hunter, was found intensely lame after a day's hunting, and the off hind fetlock was tremendously enlarged, bruised and very tender. Lameness was at first ascribed to this cause, but as the horse's hip seemed very tender also, I made a rectal examination and found the shaft of the ilium fractured. Enquiries later revealed the fact that in boxing the horse to the meet he had fallen off the loading bay on to the railway line. Professor Pritchard expressed the opinion that the ilium was fractured then, that the horse hunted all day with this fracture, and that the bruising of the fetlock arose from repeated "brushing" owing to the defective action of the injured hip.

Treatment.

The treatment of secondary lameness is :—(*a*) Preventive ; (*b*) Curative.

Preventive treatment is in many cases a simple matter, in other cases the development of secondary lameness is, to some extent, almost unavoidable. Where the primary lameness is of so acute and painful a character that disuse atrophy is bound to result, as is almost certain, in severe lameness of the hind limb, every effort should be made to prevent the secondary lesions from becoming extensive or acute.

The most frequently observed effects are wasting of the gluteal muscles. In many cases of wounded hind feet, coronitis, fractured hind pastern, and acute hook joint lameness in which it is necessary to keep the patient in slings for weeks at a time, the foot is often kept off the ground almost entirely, and muscular atrophy is very quickly seen. The tone of the muscle is easily lost and not very easily or quickly restored. An endeavour to maintain tone by frequent massage of the hip and hind quarter should be made early. This may be done by hand rubbing, by a wisp or a body brush vigorously applied, or in the case of thick-skinned cart horses by a dandy brush. If the wasting is very extensive the massage should be carried deeply through the skin by slapping the parts with the flat hand, tapping with small rubber covered sticks as used in the human subject, or by deep digital massage, performed by stabbing the muscles repeatedly with the extended finger. By this means the stimulus is carried right through the skin to the affected muscles. Mere rubbing of the skin itself is too superficial in effect to be of much service in extensive atrophy. A very mild soap or camphor liniment may be applied, but strong embrocations which have a vesicant effect should be avoided, as this treatment should be continuous and once the skin is blistered nothing more can be done to the parts until it has recovered.

Galvanism is not well tolerated by horses, as the shock generally frightens them, but both the ultra-violet rays and the so-called " violet-ray " lamp, which is simply a high frequency electrical lamp, can often be used with the very greatest benefit.

The " violet-ray " lamp is comparatively cheap, and simple and easy to use, and it is quite practicable to lend out this appliance to clients to run off their ordinary lighting current or off a dynamo, with the very best results. Now that the electric current is coming into general use it should be more and more used, and nobody who has seen the beneficial results arising from its application in the treatment of muscular atrophy and the relief of pain from muscular strain would care to be without it.

The ultra-violet ray is, of course, more complex, and should only be used under careful supervision, as there is a danger of " sunburning " from over exposure, but its effects are very marked in the relief of pain and the stimulation of repair of atrophied muscles.

As soon as practicable the animal should be exercised, the amount and nature of the exercise being regulated according to the nature of the case and the daily progress made. On no account should atrophied muscles be overtired and it is far better to give three short bouts of exercise daily, with a rest in between them, than one long bout followed by twenty-four hours' rest. If the animal is very lame and unable to get up and down with safety, it may be necessary to keep him in slings at night for a time. It is often the case that horses have to be slung in stalls with an excessive degree of slope, thus putting an undue amount of weight and strain upon hind limbs and feet. I have found it good practice in these cases to reverse the position of the horse in the stall occasionally, for a few hours at a time, to enable him to rest his hind quarters and feet. Walking exercise should be regulated by time or the attendant told to go to a fixed point and return, as many men have no idea of time or distance. The duration and distance can be increased daily, but for the first day or two, until it is seen that the exercise is having a beneficial effect, and has not been started too early, it should be carefully supervised.

In unilateral lameness the patient should be made to walk in circles with the affected limb on the outer arc so that his tendency to take a short step with the lame leg and so avoid the prescribed exercise is overcome. Some disappointment may result from a temporary increase of the lameness when exercise is first attempted, but if it has not been commenced too soon, so as to cause great pain on movement, which does not pass off with continued exercise, persistence in it for a few days will probably soon show an improvement.

The advice often given to the owner of a lame horse is " Get him sound and sell him." If the owner acts upon this advice and the horse is sold to a neighbour for a poor price and continues to do good work for years without further trouble the practitioner loses prestige and possibly his client. This advice is often given through lack of patience when an animal goes a little lame on first returning to work and sufficient time for conditioning has not been allowed. If the horse is a good one the advice should be " Get him sound and keep him." Many horses thrive on hard work and lots of old hunters and steeplechasers are very stale and " crocky " until thoroughly fit.

Some experiences of my own with cases of this type may not here be out of place.

In 1911 I was called in to attend a roan hackney pony, very lame on the off hind limb. She had a fractured pastern and from the history she appeared to have been driven for several days in this condition before the lameness became acute. She was brought to my place in an ambulance, placed in slings, and the fracture set in plaster of Paris. The injury was evidently very painful, as she held the foot up a great deal and considerable atrophy of the hip and thigh resulted. The fracture united well and, after a rest in a loose-box, her owner decided to turn her out at a friend's farm. She walked over there, a distance of two miles, without difficulty, and as her owner had promised to report progress, I did not go to see her until he informed me, less than a fortnight later, that the pony was intensely lame and that he contemplated destroying her.

On visiting her I found her lying down on the lame side. She got up with difficulty and on enquiry I found she was nearly always down. The lameness was now acute and the wasting of the hip much more pronounced, whilst the fetlock was getting very stiff from fibrous deposits around it. She was far too lame to have any inclination

to move about voluntarily, so arrangements were made for her groom to go over three times a day and walk her round the field in a big left-handed circle, *i.e.*, with the lame leg on the outer arc. In one week she was exercised in left-handed circles on the lunging rein and in three weeks she returned to work, practically sound.

It will almost invariably be found that a horse with an atrophied hip, quarter or thigh, lies down on the side which is atrophied, thus adding to his difficulty in rising. When going down he carries his weight upon the sound leg until the last possible moment, flexing all the joints on that member until he is nearly recumbent, and then subsiding more or less suddenly upon the lame limb. When practicable these cases should be turned upon the sound side as soon as they lie down, as the atrophied limb very rapidly gets " cramped."

Not knowing the previous history of the next case, I am uncertain whether it should be described as a case of secondary lameness or as recurrent primary lameness, but it is quoted as a marked instance of the beneficial effects of prolonged walking exercise on wasted muscles in restoring both volume and tone. Some years ago a friend of mine bought a beautiful five year old black hunter gelding for 45 gs. at Sewell's repository in Dublin. If sound, he was obviously worth much more and both his owner and I examined him repeatedly to find out what was wrong, but without success. He was a brilliant hunter and we both rode him several times without mishap, but one Sunday morning his owner sent word to me that the horse was dead lame on the off hind leg, and was unable to get out of the stable. He was obviously very lame in the hip, which was very swollen and painful. He had been hunted the previous day by a lady, a very fine horsewoman, had been through a long run with foxhounds, had gone well throughout and returned home sound. He had jumped one very big place with a rather boggy take off, but beyond that nothing unusual had happened. On comparison with the other hip a slight wasting above and below the swollen hip-joint, which we had previously overlooked, was now discernible. Hot fomentations were applied to his hip for several hours daily and by the Wednesday he was walking sound but trotting lame. I now wished to blister his hip, but his owner demurred as he wished to run him in a point-to-point steeplechase six weeks later. We had doubts about his being sound in time, but we compromised by putting him into walking exercise and awaiting events. He made rapid progress and with a view to keeping him fit his exercise was increased daily until he was walking 34 miles a day, in a full suit of clothing with a lad on his back, 17 miles out and home again.

Being afraid of laming him, I would not allow him to have a gallop, and at the end of six weeks had the pleasure of riding him in a three and a half mile point-to-point steeplechase, beating 13 other horses and only being beaten myself by a horse which afterwards won nine open steeplechases. This horse was sold in the paddock after the race and was passed sound two days later by a well-known racing veterinary surgeon. His subsequent history was traced and for at least three years he gave no further trouble.

A complicated case of secondary lameness in a two-ton coal horse occurred in the autumn of 1925. During the summer he got open coffin joint through treading on a nail. He was in slings for several weeks until the joint healed and was then very lame from muscular atrophy. He was then exercised three times a day, and placed in slings at night until he was able to get about fairly well. His owner then suggested turning him out to grass. To this I strongly objected and, as he was unfit for coal haulage on the road, he was sent down to a farm with instructions to work him on the plough six days a week.

This completely restored the volume of the wasted muscle and as the farmer reported him sound he was returned to his depôt and I went to see him. His foot was very overgrown as his shoes had not been removed for about three months and in addition he had developed a very large false ringbone on the pastern. This was fired and he went back to the farm for a month. He then came up sound and with the exception of the time of the coal strike has been at work ever since. The ringbone has been almost entirely absorbed.

The lameness arising from contracted feet calls for a different line of treatment. This lameness is commonly seen in town vanners which have been more or less lame from corns, ringbone or contracted tendons for some time, and it is a frequent complication of navicular disease in hunters and steeplechasers. Also in this class of horse, lameness arising from badly contracted feet is often mistaken for navicular disease. The secondary lameness is usually exhibited after a period of rest. Contracted feet are often a primary cause of lameness in small ponies which are not regularly worked and not frequently shod.

The usual method of treatment is firing or blistering, taking off the shoes and turning out to grass. During the run at grass, especially if grass-tips are put on and frog pressure thus increased, and if the patient is not too lame to walk about freely, hoof expansion and recovery often take place. For years, however, I have made a practice of always performing hoof section in all cases complicated by contracted hoof walls, no matter what other treatment was adopted or what was considered the primary cause of lameness. After doing this for some time I became convinced that many cases of apparent ringbone lameness were not due to the ringbone at all, but to secondary causes in the shape of contracted feet. In cases of the kind I therefore tried the effect of hoof section alone and in very many instances obtained recoveries, keeping the horses at work with the foot sawn open. Frog pressure is obtained by lowering the heels, or if necessary by the use of leathers or pads to bring about expansion, but above all, exercise is necessary. In a few cases the lameness is increased after operation, but this may be relieved by hot foot baths or poultices. If the foot is very hard, as contracted feet often are, poultices made with hot vinegar, instead of water, should be applied to soften the horn. Exercise must, however, be persisted in.

The operation of hoof-section should be carefully performed, personally, and not left to a farrier. It is graphically described in Caulton Reek's " Diseases of the Horse's Foot." It is a most useful operation and not as much practised as it deserves to be. There are also several kinds of expansion shoes described, some of which are very useful. As an instance of the utility of this operation

the following case, one of many operated upon with success, may be quoted.

A client of mine bought at the Newmarket sales, about fifteen years ago, an aged thoroughbred gelding, a winner on the flat and over hurdles.

He had been cast out of a racing stable as suffering from navicular disease in the off-fore foot and my client gave 19 gs. for him, as a speculation, thinking he might make a hunter if anything could be done to relieve his lameness. His foot was very contracted, with steep, upright quarters, and a very withered frog. I expressed no opinion as to the original cause of lameness, but felt certain that it was at least aggravated by contraction, so sawed the foot open at the quarters, lowered the heels and had him shod with a T shoe, like a small grass tip with a frog plate, and his owner rode him hacking all the summer. By the autumn he was going quite sound, had grown a nearly normal foot and was hunted all the following season.

Secondary lameness from fibrous anchylosis is not at all an uncommon condition. It used to be frequently seen in 'bus horses and in trotting vanners and in racehorses, polo ponies and hunters after a breakdown. It is best treated by taxis, the forcible flexion and extension of the anchylosed joint under complete anæsthesia. The injection of fibro-lysin into the dense fibres prior to operation is of very great value. I was first induced to try taxis in cases of fibrous anchylosis by reading an article by the late Colonel J. A. Nunn in *The Veterinarian*, over thirty years ago. Colonel Nunn anæsthetised his patients by chloroform and then forcibly flexed and extended the anchylosed joints.

One such case was reported by me in *The Veterinary Record* three years ago. The subject was a very well-known grey polo pony which had a forward sub-luxation of the fetlock joint following a severe sprain. It had been fired and blistered when I saw it, and had been lame for three months. The muscles of the shoulder and arm were badly wasted from disuse and the pony literally was upon three legs. He was brought to my infirmary in an ambulance, cast, and under deep anæsthesia the fibrous adhesions which I had previously injected with fibro-lysin were broken down. To my delight and surprise the animal walked nearly sound on rising, although he stumbled badly. This treatment was repeated two or three times, and the patient put into regular exercise. All the following winter he was ridden as hack to the meets in Leicestershire, hunted a few times at the end of the season, and afterwards played club and regimental polo for several years.

Another case successfully treated upon exactly similar lines was a butcher's pony which got severely kicked on the point of the shoulder by a cart horse whilst turned out to grass. After recovery from the bruising and soreness, which was treated by fomentations, and a blister, fibrous anchylosis resulted. Setoning was tried as a counter irritant, but the lameness very rapidly increased until it became impossible for the pony to extend his humerus. After once breaking down the fibres under chloroform the pony rapidly recovered.

I am inclined to think very highly of the value of injections of fibro-lysin in these cases and also in the treatment of old-standing contracted tendons. In the latter affection I have had several recoveries after repeated injections in cases where tenotomy appeared the only possible treatment. The injections are followed by massage and the fitting of a thick-toed shoe in order to stretch the contracted tendons, and forced exercise is resorted to.

As a sequel to coronitis or an acute attack of laminitis, the growth of horn on the hoof walls is often very irregular and thick bands at the coronet may cause pressure and lameness.

This may be treated in two ways, either by rasping the wall thin, or, if it is desired to avoid removal of the periople, by cutting it through with the saw in a number of places to allow of expansion.

Dropped sole must be treated by appropriate shoeing, either with a rocker bar shoe, a seated shoe, or, in my opinion, best of all and easiest to make (a matter of importance if a first-class farrier is not available) a deep narrow shoe which follows the course of the wall the whole way round. This shoe must be deep enough to keep the dropped sole off the ground and the sole is further protected by a leather. Hoof section in these cases is of very great benefit, the saw cuts being made at the toe, one in the centre and one at each side, carried right through the wall to the white line and the wall then dissected free from the hoof by a sharp searcher. Very often a marked improvement in action follows the relief of pressure thus obtained at the toe. This operation is also well described in Caulton Reeks' book.

Pressure laminitis, sometimes complicated by descent of the pedal bone, through the sole, is a very real danger in horses very lame on one hind leg and constantly bearing their weight upon the other. I had one such case in a hunter which cut its flexor tendons under the heel, very badly, by stepping into a hole in which someone had dropped a broken bottle. This complication has always made me nervous about patients which it is necessary to keep in slings for a long time, and I have frequently lowered such patients, in the slings, on to a deep bed of straw or sawdust to give them a rest, picking them up again when they became restless.

The roan pony I described earlier as having a fractured hind pastern was treated in this way, as she stood constantly with the injured limb held up and I dreaded a breakdown of the opposite limb. I always also make a practice of bandaging the sound limbs of such cases with cotton wool bandages, removing them night and morning and hand-rubbing the leg.

The hunter, the plantar nerves of which I anæsthetised in order to demonstrate the shoulder as the seat of lameness, came " hunting sound " after being driven night and morning from its owner's house to the railway station two miles away, in a light brougham, thus gaining muscular condition without the strain of carrying a rider.

General Hygienic Measures.

In addition to surgical treatment, careful attention to general hygiene is very important in these cases. The diet must be carefully regulated so as to maintain and gradually tone up the patient's condition with a view to its early return to work.

A reduction in the loss of working days goes far to reconcile the owner for the outlay upon a long course of treatment and if there is a possibility of gradually merging the exercise into a light amount of work, the corn ration

must be gradually increased. I have found it good practice to give horses which were doing a good bout of walking exercise half their working corn ration, with a liberal amount of long hay. Roots or green fodder should be given if in season or a hot bran mash about twice a week.

If the owner is a good horse keeper and will supply what is asked for, there is seldom much need for medicine, but if laxative changes of diet are difficult to obtain, the horse may have occasional doses of mag. sulph. or, better still, artificial Carlsbad salts in his water or food.

If there is any tendency to œdema of the legs which does not respond to massage and bandaging, a few doses of biniodide of mercury and pot. iod. in solution may be given. This is very much cheaper, less nauseous and less depressing than potassium iodide alone.

If the bowels or liver are torpid I have found one or two drachms of calomel, in a mash or rubbed dry on the tongue, sufficient. This can be followed up by artificial Carlsbad salts. Aloetic purgatives should be avoided. A horse suffering from an old-standing lameness is quite unhappy enough without having a physic ball inside him.

In hairy-legged cart horses there is a tendency to get very itchy, and the legs should be kept clean to avoid this. One of the nicest dressings for this purpose is the white soft soap made by dissolving a pound of yellow soap in a gallon of boiling water, pouring in a pint of kerosene and stirring until cold. This is well rubbed into the hairy legs, left on twelve hours, then washed out with hot water. It is a nice shampoo for itchy manes and tails, non-irritant, and leaves the hair glossy.

The shoes should be removed at regular intervals and the feet kept clean. If a horse has to stand for weeks at a time in a badly paved stall, thrush or canker is apt to result.

In one or two cases of laminitis I have had remarkable results with heavy doses of alum. In other cases it has been a complete failure.

Horses in slings must be watched carefully for bedsores, and at the first sign of chafing the slings must be suitably padded or adjusted. The same remark applies to head collars.

For very lame horses in loose-boxes the bedding should be short to avoid getting wound up in a heap. "Cavings" or chaff from the threshing machine can often be obtained in country places and makes a good bed. Sawdust is very hot for a horse to stand upon.

I attach very great importance to a supply of good long hay, or some good roots or a lot of fresh cut succulent green food in these cases. If one can keep a horse more or less constantly feeding it not only maintains his condition but it keeps him from getting bored and helps him to forget his troubles.

In conclusion, I would like to say a few words about the treatment of these unpromising cases from the psychological point of view.

First of all, there is the effect upon the practitioner himself. The patience, acumen and perseverance necessary to their correct diagnosis and successful treatment cannot but exert a favourable effect upon ourselves. The observation of these long-standing cases, of the change from acute to sub-acute lameness, thence to the stage where light work is possible, finally the complete restoration to hard working condition, gives us a feeling of pride and satisfaction in work persevered with and well done. Moreover, each case of this kind carried through to its successful termination teaches us much in the way of diagnosis, treatment and the duration of the lameness, enabling the experienced practitioner to predict with a considerable and growing amount of confidence when the patient will be "fit to work."

The effect upon one's clients is equally satisfactory. One must, of course, take into consideration the monetary value of the patient before and after treatment and be quite frank with the owner about both, and also about the cost of the treatment itself. The cost of treatment in such prolonged cases is not always heavy, as the treatment itself is often largely advisory and supervisory.

A successful termination, followed by a good period of sound work, satisfies the owner, who himself takes a share in the pride of recovery. Failures there may, of course, be, but the sensible and reasonable owner is generally gratified by the knowledge that one has had a good try.

You have an old saying in Lancashire—"Its dogged as does it"—which always appeals to me.

Success in the treatment of long standing and obstinate cases depends largely upon doggedness in persevering with them.

Discussion.

Mr. E. H. Curbishley: It appears to me to be particularly fitting that the first public appearance of our friend Mr. Wilkinson should take place in the city in which he received his introduction to veterinary science and practice, and I feel very gratified at being allowed to be the first to give him a "welcome home" to Manchester, and at being asked to open the discussion upon his paper—a paper which I think you will all agree is a highly instructive and interesting one; although it may serve sadly to remind the more elderly of us of days long past when there was enough of this kind of work to keep us all fully occupied every day.

The first impression Mr. Wilkinson's paper conveys to my mind is, perhaps, the conviction that if it happened that two veterinary surgeons were consulted about the same animal, but upon different dates, they might conceivably express very divergent views and yet both be right, so that it behoves us, under such circumstances, especially to observe a kindly tolerance and respect for the opinions of our confrères by making such explanations to a client as should show him some of the difficulties of our calling, and at the same time help him, in the face of apparently contradictory findings, to retain his confidence in our profession, both individually and as a whole.

We shall, of course, readily admit that the subject of lameness in all its aspects is far beyond the scope of a short meeting such as this, and so I will not wander beyond the limit set by Mr. Wilkinson.

I should like to compliment him upon the vision he displays in asserting that bleeding, blistering and un-nerving are not the last word in the treatment of lameness in these progressive days, and also for providing us with titles for other useful papers, such as: "Lameness caused by various Morbid Conditions," and "Lameness associated with Spinal or Cerebral Diseases," or "Cases of Lameness which develop Ataxia or Paralysis."

I think the use of the word ataxia is much more accurate than to dub every animal which cannot stand or does not walk correctly as a victim of a partial or complete paraplegia, as was the custom in days gone by. One pitfall for the unwary presents itself as "dual lameness," and no paper on the subject of lameness seems quite complete to an "old timer," at any rate, that does not refer to the "classic" example of Professor Dick's oft-quoted case of a horse with a fractured pastern which was also suffering

from a "prick," but which made a good recovery through the discovery and treatment of both lesions.

I have certainly seen cases of secondary lameness arising from the cause mentioned by the essayist, but because one sees atrophies in different forms so often in chronic lameness, they may perhaps not always receive the consideration they deserve, so that one which actually is causing lameness may be overlooked.

An interesting point with regard to contracted foot, to my mind, is this—what is the significance, in examinations as to soundness, of odd feet? Do they suggest a congenital or acquired peculiarity, or are they an evidence of a long continued or acute lameness and should they be passed sound? Pyramidal disease is, in my opinion, a most serious defect, especially in stallions of the heavy breeds, and I should like to ask—if it occurs in stallions or work horses—"is every animal in which the pyramidal process can be definitely felt or seen to 'stand up' on the coronet, and whether lame or not, to be condemned as unsound?"

I believe that, in time past, neurectomy was resorted to too frequently and without sufficient reason, and I suppose that callosities on cut nerve ends denote bad surgery, either because the cut end has been left too long, or surgical cleanliness has not been attained, so that healing has been by granulation which has taken in the nerve ending, rather than by one of the two first methods.

Plantar anæsthetisation ought to be, and probably is, generally practised nowadays, but as some appear to have difficulty in avoiding the blood vessels, I suggest that Mr. Wilkinson should tell us the different sites he favours for needle puncture, the method of introduction, and what dose of cocaine he thinks sufficient.

Quittor is a condition which may arise from various causes, and extirpation of the lateral cartilage is an operation offering no particular difficulty, but I might mention that in those cases caused by crushed heel or festered corn, and which do not extend forward far enough to endanger the capsular ligament of the corono-pedal articulation, I have long practised a very crude but particularly satisfactory treatment by passing, under an anæsthetic, of course, a red hot poker through the heel from below upwards, bringing it out behind and above the coronary band. The wound is kept open with a plug of tow and, with a round shoe on, the animals are kept at work.

The forcible breaking down of fibrous anchylosis seems never to have been as favourably regarded as recorded results suggest that it should be, and we shall be indebted to Mr. Wilkinson for exact details of how it is done, what degree of force should be used, and also what risk, if any, might attend it.

I note that Mr. Wilkinson advocates hoof section largely, and even in deformed laminitic feet, and should like to know whether he also "cuts windows" during the acute stages of laminitis, and, if so, if he finds that the escape of the inflammatory exudate prevents pressure upon and displacement of the os pedis?

One turns with regret from the consideration of "surgical shoeing," especially as it forms so great a part of the successful treatment of many forms of lameness, and adds so greatly to the comfort of the patient, but time does not allow.

We recently had a paper from Mr. Burndred, of Hanley, on "Ray Treatment," which proved exceptionally interesting, and I am sure that the members present will be anxious to hear the views then expressed supported and enlarged upon by another enthusiast, so no doubt Mr. Wilkinson will refer to this subject.

I hope I have not taken up too much time, but Mr. Wilkinson has rather carried me away. I beg to thank him very much for his excellent paper, which I hope will be further discussed.

Mr. G. MAYALL said that while listening to Mr. Wilkinson's paper his thoughts went back to twenty years ago, and he did not think that, at the present time, veterinary practitioners had enough of these cases to deal with. One difficulty to contend with to-day was that many firms had both horses and motors, and when a horse needed treatment it was a case of getting it back on the road as quickly as possible. With reference to firing and blistering, he was under the impression that there was now a law preventing this unless anæsthesia was carried out. In the days when it was a common practice, they did not anæsthetise the animals. Regarding massage treatment, mentioned in the paper, it was a good treatment if it was done properly. Human massage was a very scientific operation which involved a good knowledge of the muscles and tendons, and one could hardly expect the average stable-man to be capable of administering such treatment to animals. He had not heard in the paper any mention of treatment by water, either cold, warm, or sea-water. He had had good results from sea-water by practical experience—owing to playing Rugby football his left knee was "put out" on three occasions, and on the last occasion he was told by his doctor that hospital treatment would be necessary. As it had been successfully treated on the two previous occasions, he refused to have this treatment, and he went to a sea-side resort where he bathed in the sea 16 times in 14 days, with the result that the knee fully recovered. He was confident that the recovery was due to exercising the knee by swimming in cold sea-water. Mr. Mayall said he had had good results by treating cases of lameness by cold water. One did not hear much about hoof section in these days, but some years ago it was a common practice. The horses were kept at work, and he was afraid that if it was done nowadays, the R.S.P.C.A. would soon take action. With regard to treatment, he had had some good results with alum, also some failures. The main trouble was that nobody knew how it acted, and one could not rely upon it. He thought that some of the cases which Mr. Wilkinson described as secondary lameness were primary lameness with secondary causes.

Mr. W. WOODS said that years ago it was a common practice to expand the hoof. There was a shoe specially made to fit a contracted foot, and it was fitted with a bar and screw, in such a manner that the heels could be widened by turning the screw at intervals of a day or so, and such cases were successfully dealt with. One met many cases where there appeared to be some fibrous tissue in the limbs, and he remembered one case in particular where he tried to extend and flex the limb, but the horse would not allow him to do so. His father at that time advised him to put the animal in the canal and make it swim, which he did with good results, and he would confidently advise anybody who wanted to exercise the forelegs of a horse, to put it in deep water and make it swim.

Mr. W. TWEED had enjoyed listening to the paper and admired the way in which the essayist described the details of his cases. Another point that he liked was the fact that horses, when possible, were given work to do, and that by working they often recovered. That applied very much to human beings who, by occupying their time, often overcame minor ailments. He cited the case of a hunter which feel in a ditch and hurt its back. All that could be seen was a slight three-cornered action, and the owner would not ride it as he thought it might trip and throw him off. He would like Mr. Wilkinson to describe the symptoms of back lameness.

Mr. J. K. BATEMAN remarked, with regard to infected sheaths, that he had given vaccine treatment with good results, and he wished to know if Mr. Wilkinson had had any similar experience of vaccine treatment.

Mr. J. HOLROYD, like Mr. Mayall, thought some of the cases were of primary lameness with secondary causes. A true secondary lameness was laminitis, following metritis, or following stomach trouble. With reference to contracted feet, they were the cause of a lot of trouble, and in his opinion were secondary to other lameness. Regarding cases of odd feet, he did not like dealing with such animals, and he would not buy animals with that condition, as they were often the source of much trouble.

Mr. WILKINSON, in reply, said he had noted what Mr. Curbishley had said about the problem of two veterinary

surgeons expressing divergent views, and both being correct. He met with a case where five veterinary surgeons expressed different views on one animal—a horse lame in one leg. It was eventually found to be a thorn in the shoulder. In his experience, as a hunting man, he found that in horses lamed by thorns one could usually find the thorn near the shoulder. With reference to odd feet, if all were "turned down" it would result in a large number of valuable horses—racers, hunters and steeplechasers—being rejected. When advising on the purchase of a horse with odd feet, he usually mentioned the fact, and if there was no lameness, advised purchase. Regarding pyramidal disease, everyone would agree it was a grave condition, and some horses with the condition always worked with some degree of lameness. With reference to "window-making" in laminitis, he had not practised this method, but he had cut the hoof with good results. So far as the use of cocaine as an anæsthetic was concerned in the detection of causes of lameness, that was a thing that wanted careful watching. When an anæsthetic was applied to the plantar nerves, it travelled up and down, and affected the nerves. He always used a small sharp needle, which he always sharpened himself by means of a file, filing down the shoulder which was always there when turned out by the instrument makers, and never gave more than 6 grains of cocaine, leaving it for about 20 minutes. It was useful to add a small quantity of adrenalin, which prevented it spreading. He thought Mr. Curbishley's plan for sloughing out quittors a good one. He treated a hunter by a similar method to that quoted, and had a complete recovery. With reference to the amount of force used in breaking down the fibrosis, with the last case he treated, one could not extend or otherwise move it. He firmly bound the horse, cast it with a rope and snatched the foot violently towards him, and he could hear the tissue break down. No harmful effects ensued, and he did not think that one man doing a similar operation could damage the tissue. He had noted what Mr. Mayall had said about hoof section, and horses returning to work, and in his experience three days with light exercise was sufficient treatment. With regard to Mr. Mayall's knee trouble, he thought it was recurrent primary lameness, and could quite understand him getting it right by swimming. He could not imagine any exercise more beneficial to lameness than swimming, but in this country the weather was frequently too cold for that treatment to be applied to animals. With reference to working lame horses and friction with the R.S.P.C.A., that depended entirely on the amount of lameness. Regarding the flanged expansion shoe referred to by Mr. Woods, he had used that shoe with extraordinarily good results. He thought the back lameness referred to by Mr. Tweed might have been due to sprain of the psoas muscles, and it was a debatable point whether such cases would become sound. In some cases he had dealt with, pain was produced by pressure upwards on the psoas muscles. Concerning the vaccine treatment referred to by Mr. Bateman for infected sheaths, Mr. Wilkinson stated that he had not tried that, but had given ultra-violet ray treatment with good results. One advantage of the ultra-violet ray treatment was that the horse could be kept working. He gave 20 minutes exposures, three times a week, and had never had a case of burning. He thought he had covered the points raised in the discussion, and expressed thanks to his audience for the patient hearing given to him.

Commenting upon the report of the Medical Officer of Health of the Worcestershire County Council, Colonel Howard said that the important matter of meat inspection was carried out in very varying ways throughout the country. In one authority's area, where the population was 30,000, only 1½ lb. of meat were condemned in twelve months, while in Oldbury 1,377 lb. of meat were destroyed.

Way for the Horse.

(Reprinted from *The Times*, 2nd Jan., 1929).

All who own and love horses will sympathise with Lady Ipswich, who was yesterday summoned before the magistrates at Towcester for riding her horse on the footpath by the side of the Watling Street road. In the good old days before all highways (and most byways) were converted into motor-ways there was sound common sense in regarding footpaths bordering the roads as sacred to pedestrians and perambulators. But in the last thirty years or so times and conditions have changed, and the magistrates showed their appreciation of the change by dismissing the summons on payment of costs, adding by way of a rider that some provision should be made for the horse. In a letter addressed to the Bench Lady Ipswich made it quite clear that she took the law into her own hands knowing quite well what she was doing, and deliberately courting the consequences of her action. She considered, as she puts it, that she had no alternative. The tarred road by which she was coming back from hunting was in such a dangerous condition that she had seen three horses slip up, and one of their riders seriously injured on that particular day, and rather than run the risk of an accident to herself or to the valuable animal on which she was mounted she chose to ride on the footpath for a short distance till she had passed the danger zone. Most people will agree with her that it is unfair that the roads for the maintenance of which the community is taxed should be kept in such a state as to be a perpetual menace to the limbs and horses and perhaps the lives of all who wish to put them to their oldest and most legitimate use.

There is, of course, nothing new in the indictment which Lady Ipswich brings against our latter-day roads. The growing extent of the evil has long been recognised. Eight years ago a Slippery Roads Committee was set up by the Ministry of Transport to inquire into every phase of the nuisance and to make suggestions for its abatement. Since that time the problem of providing roads with surfaces safe for horses has been carefully considered by the National Horse Association and by County Surveyors and other interested parties, and the Ministry itself is conducting experimental research with the same object in view on specially reserved stretches of roads on the Barnet and East Ham by-passes. So far it cannot be said that any common line of action has been found. It is notorious that the polished surface which the new bituminous roads speedily acquire under motor traffic renders them very dangerous, especially in wet weather, not only to horses, and their riders and drivers, but to all classes of motor vehicles, to say nothing of the trouble which they cause to the trainers of thoroughbreds and to farmers when their horses or cattle are moved out of their stables and yards and fields to the roads. Numerous suggestions have been put forward for improvements which might be made by change in the designs of motor vehicles (to prevent skidding), in the accepted methods of shoeing horses, and in the systems now adopted for road construction. But there for the present the matter comes to an end. Nothing seems to be established except that the motor vehicles for which the new-fashioned roads are built are the direct cause of the whole trouble, and that no provision—such as the restoration of the belts of grass which used to be found by the side of roads, big and little alike—is made for the horses that are its chief victims. The only hope seems to lie in the possibility that the Ministry may shortly be in a position to tabulate and publish the most promising of the various recommendations that have resulted from their research and inquiry, with a view to the adoption of some common policy. If the action and the letter of Lady Ipswich serve to hasten reform her trespass on the sacred precincts of the footpath will not have been in vain.

COMMUNICATION.

The Surgical Approach to the Femur of the Dog.

By W. P. Blount, M.R.C.V.S., James Tindal Post-Graduate Scholar, The Royal (Dick) Veterinary College, Edinburgh.

It is recognised that certain types of fracture of the femur of the dog fail to respond to treatment by the usual mechanical external appliances. In those cases where the fracture cannot be satisfactorily united in this manner, the surgeon seeks to expose the bone by incision. The question then arises: "What is the simplest and safest route by which this can be accomplished?"

The shortest route is clearly one from the medial aspect, but this is complicated and made dangerous by the disposition of the pectineus and other muscles, and the femoral vessels. Fortunately, however, the lateral aspect presents a much easier and absolutely safe route by which access to the bone may be obtained. Reference to Figures 1, 2 and 3, representing transverse sections across the thigh at different levels, will show that approach to the femur may be safely gained by passing between the biceps femoris and lateral vastus muscles.

The position and direction of the incision necessary to reveal these muscles is indicated by a line drawn from the highest point of the trochanter major to the lateral lip of the patellar surface (trochlea) of the femur. The free extremity of the trochanter is not difficult to determine, and in the majority of dogs the patella may readily be displaced enough to render the lip of the trochlea palpable. If the animal is not unduly fat or powerfully muscular, the line of the femur can also be distinguished in the living animal.

The actual length of the skin incision will vary according to the size of the patient, but primarily need not extend beyond the limits of the second and third quarters of the femur. Closely attached to the skin is the thin cutaneous muscle which in this region is scanty, and is not of surgical importance. Several layers of fat may next be encountered before reaching the true fasciæ of the thigh. In the proximal portion of the limb the fat is most abundant, and may be attached to either the deep or superficial layers of the sartorius muscle. A thicker stratum lies between this and the cutaneous muscle. Towards the distal extremity of the femur the layers of fat become thinner and fewer, and in all cases blend with the fascia on the lateral aspect of the biceps femoris muscle, or with the skin overlying that area.

The disposition of the fasciæ of the thigh is complex (see Fig. 4), but fortunately under the line of incision is easier to follow. It is necessary, however, to understand the general plan of arrangement, since this conditions the final stages of access to the bone.

About the middle of the thigh the tensor muscle of the fascia lata ceases, but it is continued to its insertion by a strong aponeurosis, the fascia lata. The fascia lata extends laterally over the vastus muscle, and splits into two layers a short distance in front of the biceps femoris muscle. The deeper layer continues round the vastus muscle, and is finally attached to the lateral lip of the linea aspera. The more superficial layer passes towards the biceps muscle and here again divides to cover the deep and superficial aspects of the muscle. The superficial layer soon blends with the fat-bearing membrane from the sartorius muscle.

On the medial aspect of the thigh the compound fascia extends as far as the femoral vessels (under cover of the posterior portion of the sartorius muscle) which it encloses. It then divides into two: one layer passes to the medial lip of the linea aspera (after attachment to the cranial border of the adductor muscle), while the other layer continues past the pectineus muscle to the superficial aspect of the adductor.

The lateral vastus muscle has always a very thin, delicate fascial sheath of its own, but only in exceptional cases is this likely to interfere with the operator.

Once the fascia lata has been severed it is a comparatively simple matter to reach the femur; for, except for a few millimetres of the proximal part of the shaft, to which the lateral vastus is attached, neither this muscle nor the biceps femoris is adherent to the bone.

It will be clearly understood, therefore, that there are no muscular attachments of moment to the shaft of the femur on either the lateral, cranial, or medial surfaces. The posterior surface is, however, associated with the adductor muscle for practically the whole of its length (see Fig. 5). The only difficulty which may be experienced after severance of the fascia lata is due to a certain amount of overlapping of the lateral vastus muscle by the biceps; but by blunt dissection these muscles can be separated and a good length of femur exposed.

If the fracture is extensive the initial skin incision may safely be enlarged, and the subsequent dissection similarly extended.

The chief danger zones in this operation are in the neighbourhood of the vessels that lie immediately posterior to the femur in the distal region (see Fig. 3), and of the sciatic nerve in the proximal part of the thigh (see Fig. 1).

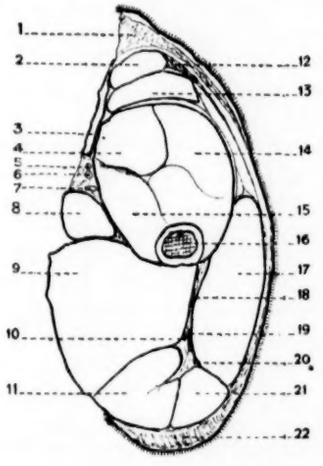

Fig. 1.—Transverse section of the thigh on a level with the junction of the upper and middle thirds.

1. Fat.
2. M. sartorius.
3. M. sartorius.
4. M. rectus femoris.
5. N. saphenus.
6. A. femoralis.
7. V. femoralis.
8. M. pectineus.
9. M. adductor.
10. N. cutaneus suræ lateralis.
11. M. semimembranosus.
12. Fat.
13. M. tensor fasciæ latæ.
14. M. vastus lateralis.
15. M. vastus medialis.
16. Femur.
17. M. biceps femoris.
18. N. ischiadicus.
19. M. adductor cruris posterior.
20. N. to M. biceps femoris.
21. M. semitendinosus.
22. Fat.

XUM

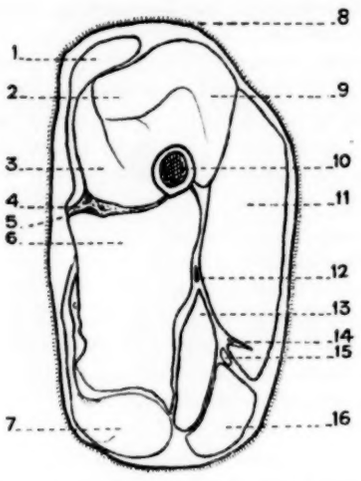

FIG. 2.—Transverse section across the middle of the thigh.

1. M. sartorius.
2. M. rectus femoris.
3. M. vastus medialis.
4. Femoral vessels.
5. M. pectineus.
6. M. adductor.
7. M. semimembranosus.
8. Skin.
9. M. vastus lateralis.
10. Femur.
11. M. biceps femoris.
12. N. ischiadicus.
13. M. semitendinosus.
14. N. to. M. biceps femoris.
15. M. adductor cruris posterior.
16. M. semitendinosus.

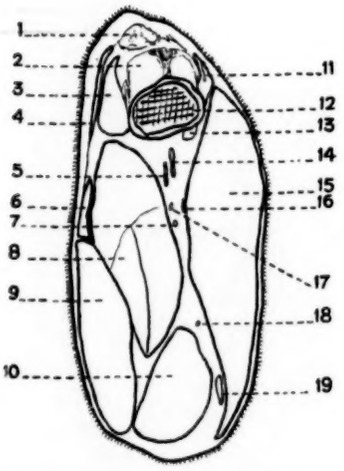

FIG. 3.—Transverse section of the thigh on a level with the junction of the third and fourth quarters.

1. Patella.
2. Trochlea of femur.
3. M. vastus medialis.
4. M. sartorius.
5. V. femoris posterior.
6. M. sartorius.
7. N. cutaneus suræ lateralis.
8. M. adductor.
9. M. semimembranosus.
10. M. semitendinosus.
11. M. vastus lateralis.
12. Femur.
13. M. adductor.
14. A. femoris posterior.
15. M. biceps femoris.
16. N. peronæus communis.
17. N. tibialis.
18. Ascending branch of posterior femoral artery.
19. M. adductor cruris posterior.

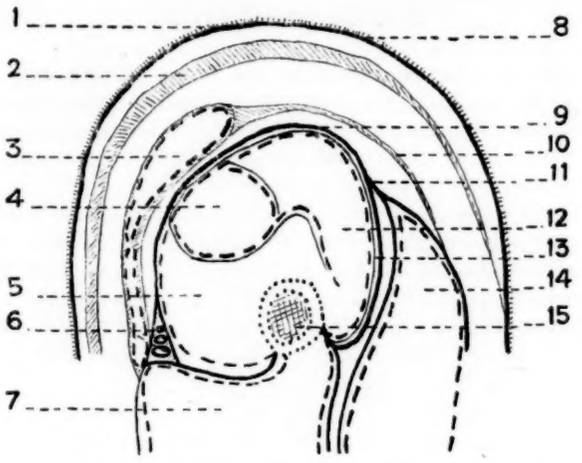

FIG. 4.—Diagram illustrating the arrangement of the fascial planes of the thigh.
The muscles are represented by interrupted lines.

1. Skin.
2. Fat.
3. M. sartorius.
4. M. rectus femoris.
5. M. vastus medialis.
6. Femoral vessels.
7. M. adductor.
8. M. cutaneus.
9. Fascia lata.
10. Fat.
11. Fascia lata.
12. M. vastus lateralis.
13. Fascia of vastus muscle.
14. M. biceps femoris.
15. Femur.

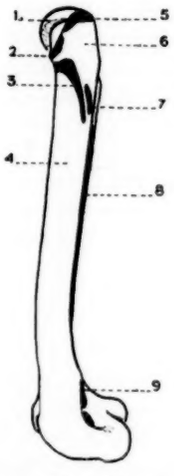

FIG. 5.—Lateral aspect of the femur showing the muscular attachments.

1. Head of femur.
2. M. glutæus medius.
3. M. vastus lateralis.
4. Shaft of femur.
5. M. glutæus profundus.
6. Trochanter major.
7. M. adductor.
8. M. adductor.
9. M. gastrocnemius.

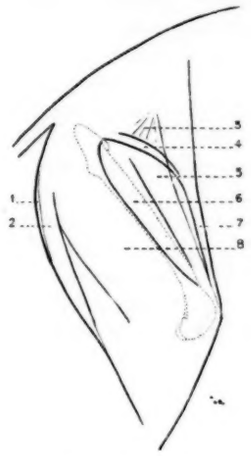

FIG. 6.—Superficial dissection of the lateral aspect of the thigh.
The position of the femur is indicated by a dotted line.

1. M. semimembranosus.
2. M. semitendinosus.
3. M. tensor fasciæ latæ.
4. M. rectus femoris.
5. M. vastus lateralis.
6. Femur.
7. M. sartorius.
8. M. biceps femoris.

CLINICAL AND CASE REPORTS.

A Note on the Castration of Calves by the Burdizzo Method.

By HENRY TAYLOR, F.R.C.V.S., Hayward's Heath.

The instrument known as Burdizzo's is somewhat extensively used nowadays and is in vogue in certain districts for castrating calves and lambs. I have no personal experience with it myself. During the last few years I have twice been asked to undertake the castration of some bullocks in a bunch that were purchased by the owners as having been operated upon, and which later on developed sexual instincts. There were three in the one lot and four or five in the other. After casting the animals the testicles were exposed in the usual way, and slight traction on the spermatic cord revealed the place where the jaws of the above-mentioned castrating instrument had pinched it, and made a mark across it. In some of the cases one testicle seemed almost as large as normal, whilst the other had atrophied. From the naked-eye appearance of the two testicles in one animal, I should not have thought he would have exhibited any sexual instincts, but the stockman said he did.

I make no comment on the method itself, but merely state the above as a fact which occurred. Probably the use of the instrument requires a little practice to exert just the right amount of pressure on the cord.

A Curious Fore-leg Lameness.

By HENRY TAYLOR, F.R.C.V.S., Hayward's Heath.

The subject was a young horse, of the vanner type, belonging to a wood merchant, and the work consisted of hauling poles and faggots out of the woods, and then delivering them in the town.

I was requested to see him because he had suddenly fallen dead lame on the near fore-leg whilst pulling a light van not heavily laden. The symptoms were as follows—he suddenly stopped going down a slight incline as if he had picked up a nail or trodden on a flint, then stamped on the ground with that leg, just as a horse would do with itchy legs, supposing it to have been a hind one. Afterwards the leg seemed to have lost a good deal of muscular power and he limped slowly and laboriously back to the stable.

In a few days he seemed better and resumed work. Then he had another similar turn. A short time afterwards I was asked to examine him. He was then standing in a sort of box, not resting that leg at all, but seemingly disinclined to move. I asked for him to brought out, and though moving rather slowly there was hardly any lameness until he had gone perhaps 15 yards, when suddenly he lifted the near fore-leg in *great pain* and literally shook it and twirled it round, trembling at the same time, particularly in the fore-quarters. He almost sank to the ground, because the off fore-leg was stretched out a long way in front. He could not put the near fore to the ground for some minutes. Then we got him back into the stable. The pain seemed as if something had stabbed him in the shoulder region. A thorough examination of the leg and foot revealed nothing, nor was there any apparent abnormality about the shoulders. I thought perhaps the lameness might be associated with the levator humeri muscle, because slight flicks with the finger on it about the middle of the neck, just over the cervical vertebræ, caused spasmodic contractions, but on trying the opposite side of the body there was no difference in the two.

The treatment prescribed was hot fomentations to the shoulder and the administration of sodium salicylate.

He did not improve; in fact, it became difficult to get him out of the stable, and though standing squarely on the leg, he would hardly move. A colleague who was called in consultation, agreed that it was a "shoulder lameness," though no pain was evinced on manipulation of that part or the leg itself. I have detailed the symptoms, but I am unable to diagnose the condition: it seems to be a sudden pain due to implication of a nerve. The owner later on mentioned that some considerable time before the onset of the trouble, the horse, when drawing out a loaded wood carriage, was suddenly brought to a full stop by its coming in contact with a stump.

It was an interesting case, but unfortunately the owner had him destroyed and no *post-mortem* could be made.

When I was a student, 30 years ago, there was a horse with a very similar lameness, which was under Professor Williams' care. He was not quite so bad and could work in a sawmill yard, but was not safe on the streets. One day he had an attack when he was near a revolving circular saw, but luckily he did not stumble against that.

XUM

ABSTRACT.

(A Single-injection Method of Immunization against Rinderpest. E. A. Rodier, Pathologist, Bureau of Agriculture, Manila.)

The following is an abstract and summary of tests regarding rinderpest immunization under a single inoculation method which have been carried out in the Philippine Islands. It is necessary, first of all, to remark briefly on the prevalence of rinderpest in those islands and of the methods pursued in control. The disease was introduced in 1886 or 1887. In 1900 it carried off more than 90 per cent of the cattle and caraboes in some provinces. In 1901 the Board of Health tried bile as an immunizing agent with indifferent success. In 1902 an Act was passed by the Philippine Commission for the establishment of a "Serum Institute" for the manufacture of rinderpest serum and virus. Efforts to check the spread of the disease by the simultaneous method (30 c.c. of serum and 1 c.c. of virulent blood) were fairly successful, but aroused hostility amongst native owners of animals, and immunization was abandoned entirely. Serum alone was then adopted, in conjunction with strict quarantine, imposed in 1911 and enforced with the aid of the Philippine Scouts. By these means the disease was greatly reduced. Quarantine, at first in the hands of the Bureau of Agriculture and subsequently delegated to Governors of Provinces, was, however, much resented, and difficult to carry out in a fenceless and mountainous country. A method of preventing rinderpest that would render quarantine measures unnecessary was indicated. To meet this, Major R. A. Kelser, of the United States Army Medical Research Board, in collaboration with Dr. Stanton Youngberg, Director of the Bureau of Agriculture, and Teodulo Topacio, and acting on original work by Boynton, produced a vaccine from tissue which was quickly prepared, retained its potency for a long time in storage, and when given in three injections at intervals of a week conferred a solid immunity against heavy artificial infection. Three injections, however, being inconvenient, work directed towards the production of a single injection vaccine was undertaken by the Veterinary Research Laboratory of the Bureau of Agriculture, and to limit the size of the dose, high potency tissues such as lymph glands, tonsils and spleen were selected for experimentation. Six experiments were carried out, of which the following is a brief résumé :—

Experiment 1.—To determine the potency of a vaccine made from mesenteric lymph glands when given in two injections, 4 to 6 cubic centimeters, respectively, at one week's interval. All animals (five caraboes) received 2 c.c.'s of virulent blood eight days after. Result—one developed slight temperature reaction, one no reaction, two developed rinderpest, but recovered, one control developed acute rinderpest and was killed. Seven caraboes received 15 c.c.'s of same vaccine and ten days later 2 c.c.'s of virulent blood. Four showed slight temperature reaction, none any clinical signs of rinderpest. Two controls showed clinical signs.

Experiment 2.—To determine the minimum dosage that would immunize highly susceptible *cattle* with two injections. Vaccine prepared from mesenteric lymph glands, doses 2 and 4 c.c.'s respectively at one week's interval and 2 c.c.'s of virulent blood to test immunity. Nineteen days after—no reaction, two cattle being used.

Experiment 3.—To determine the minimum dosage of a vaccine prepared from glandular tissues alone that would protect *cattle* with but one injection ; 3, 4, and 5 c.c.'s vaccine from mesenteric glands and tonsils respectively given and ten days after 2 c.c.'s of virus. Result—acute rinderpest with 3 c.c.'s, very slight temperature reaction with 4 and 5 c.c.'s. Control developed acute rinderpest.

Experiment 4.—To determine the minimum protective dose of a vaccine prepared from glandular tissue (mesenteric lymph glands) that would protect *caraboes* with but one injection. Two caraboes received 10 c.c.'s and two received 15 c.c.'s, followed by 2 c.c.'s of virulent virus in fifteen days. Result—no reaction in three caraboes and temperature reaction in one.

Experiment 5.—To determine the minimum protective dosage in single injection of a vaccine prepared from lymph glands and tonsils for *caraboes of known susceptibility*. 15 c.c.'s of vaccine given, and 2 c.c.'s virus ten days after. Result—no reaction in four caraboes, slight temperature reaction in three, and acute rinderpest in two controls.

Experiment 6.—To determine the minimum protective dosage for *cattle* of a vaccine made from spleen, lymph glands and tonsils. Doses of 3, 4, and 5 c.c.'s of vaccine given, and 2 c.c.'s of virus ten days afterwards. Result—slight temperature reaction at 3 c.c.'s, no reaction at 4 and 5 c.c.'s. A control developed acute rinderpest.

The most severe and final test related to twelve bulls imported from Australia. These received 20 c.c.'s of vaccine prepared from spleen, lymph glands and tonsils in one injection only. Sixteen days after they received 2 c.c.'s of virulent virus. Result—No evidence of rinderpest, though two control animals developed the disease.

Conclusions.

1.—Tests by the Bureau of Agriculture of a vaccine prepared according to the method described in the paper by Kelser, with the collaboration of Youngberg and Topacio, have fully established the value of the vaccine.

2. Under conditions existing in the Phillippine Islands, rinderpest control work will be facilitated if the number of injections of vaccine can be reduced.

3.—Early test of the vaccine prepared according to the method of Major R. A. Kelser indicated possibilities along this line. Further and more extensive tests of this phase by the writer have indicated the following :—

(*a*) That for ordinary purposes with cattle under field conditions, a single injection of chloroform-treated vaccine, prepared with spleen, lymph glands, and liver will undoubtedly protect against natural infection. However, as caraboes are highly susceptible to rinderpest, if the preparation of the vaccine is limited to the use of spleen, lymph glands and tonsils, the objections arising from the use of a dose too large to be practical for field use can be overcome by eliminating the less potent liver when preparing a vaccine for use in caraboes.

(*b*) That several tests in which twenty of the cattle and twenty-seven of the caraboes were inoculated with virulent virus, definitely show that a satisfactory immunization

can be produced against a heavy artificial infection with a single dose of a vaccine prepared from spleen, lymph glands and tonsils.

(*c*) That a dosage of 20 cubic centimetres for caraboes and 10 cubic centimentres for cattle is in every way entirely satisfactory for field use.

4.—Research is also necessary to determine the length of immunity conferred by the single-injection method as compared with the three injection method. Investigation on this phase of the problem will be continued.

(Note by Abstractor.—The above experiments and conclusions are not quite in accordance with the results of trials of vaccination by tissue extracts carried out in Kenya Colony.)

J. M.

REPORT.

Wallaceville Veterinary Laboratory, New Zealand.

The following passages are extracted from the summary of the operations carried out by the officer in charge of the above laboratory (Mr. C. S. M. Hopkirk, B.V.Sc., M.R.C.V.S.) during the year 1927-28, published in the Report of the Livestock Division Department of Agriculture, New Zealand.

A total of 4,685 specimens was received, as against a total of 3,292 for last year. The majority were milk and blood samples, but some 900 were specimens of a pathological nature, a big increase over previous years. Details of specimens are given below along with experimental work for the year.

Mastitis (Mammitis).

During the year, 1,835 milk samples have been examined. Of these, 1,032 (56 per cent.) were considered streptococcic in origin, while the remaining 789 samples were normal. There were fourteen samples, however, which were definitely due to organisms other than streptococci. These organisms were *B. lactis aerogenes, Staphylococci*, and *B. hypogenes bovis*. Experimental work was continued whenever possible throughout the year on mastitis.

B. lactis aerogenes. One cow was given an injection of a culture of *B. lactis aerogenes* obtained from a sample forwarded from the Palmerston district, where several cows had died from mastitis. In the experimental case the quarter became intensely inflamed. The cow almost at once became visibly ill, and the temperature remained high. A small amount of thin amber-coloured secretion obtained was full of bacilli in pure culture. The quarter did not become gangrenous, but the organisms present set up such a toxæmia in the patient that she refused food, gave no milk at all, and could scarcely walk. She was finally killed. Besides udder-changes, the liver had developed numerous small necrotic areas throughout, about 2 mm. in diameter. The kidney showed a parenchymatous nephritis, and the heart endocardial hæmorrhages.

Streptococcus lactis. More than one attempt was made to set up a lasting mastitis with *Streptococcus lactis*. This was found to be impossible. A passing inflammation did occur when milk cultures, pH of 4.7, were placed in the quarter, but this soon cleared. Milk from an infected quarter placed in a second good quarter was found in one case to set up a further slight inflammation, but this was not the result in other trials. One would judge from the result that the saprophytic *Streptococcus lactis*, purely from acidity produced in culture, could set up an inflammatory reaction, but that the organism produced no aggressin with which to cause the tissues of the host to react. A sterile acid fluid was found to be equally effective in producing a passing inflammation of two or three days' duration.

Longevity of Streptococcal Infection. During these experiments it was found that the usual form of streptococcus associated with mastitis had, on occasion, a longevity not before actually noted. In milk-transfer from one cow to another it was found that the streptococci had lasted three years in a quarter, the only sign being a slight leucocytosis in the milk secreted. This shows the prolonged chronicity of the disease and the possibilities arising from this fact make it difficult to give advice to farmers. Where the animal is kept it acts as a reservoir of the organism, and a danger when conditions in the herd become favourable for contagion.

Udder-flora. As mentioned in my last annual report, cows of the Laboratory herd were being exhaustively examined for udder-flora. The results showed that in quarters which had at one time been infected with streptococci occasionally streptococci were found, but staphylococci were more numerous than in quarters which had always been normal. Normal quarters were rarely sterile, usually giving a growth of cocci mainly of a type resembling *Staphylococcus epidermis* of Bergey's classification.

Cultural Examination of streptococci from cases of mastitis has continued. Such examination has served to demonstrate the unreliability of reactions in sugar media. The differences in morphology and mode of growth, and in the action on blood-agar plates, also rather serve to make the observer doubt the specificity of the streptococcus.

Acidity Tests. An experiment carried out recently with streptococci from different districts to show whether the acidity produced in the milk in culture might alter the virulence of the disease (a low acid type producing chronic pea-in-the-teat form and a high acid production giving an acute form) resulted in there being very little noticeable difference in the various strains. This must again be attempted, however, with a larger number of cultures.

Animal Experiments. Guinea-pigs were found to get mastitis if inoculated directly into a quarter. but only for a few days. It would appear that the disease is not blood-borne. Cultures of streptococci inoculated intravenously into the jugular, following injury to the quarter with acid, did not result in the streptococci appearing in the quarter. This fact is important. Experimental vaccination has been carried out prophylactically in four herds this past year, but successful prophylaxis has not been apparent.

Composite Milk-samples for Tubercle Examination.

From dairies supplying fresh milk to towns 295 samples were submitted to the test, with the satisfactory result that none reacted.

Contagious Abortion.

A large increase in numbers of blood samples for the application of the agglutination test were received, the increase being due to the experimental vaccinations carried out during the year. A total of 1,953 were received ; 480 (24 per cent.) were positive.

The Laboratory clean herd is still unaffected with abortion, and all heifers are now in calf for the second time.

Agglutination Test. The fast method tried last year was repeated where blood samples were laked, and again gave good results. Laking of the blood masks the reading of the agglutination test very greatly by the formation of a flocculent deposit. On this account many samples have been thrown out as useless.

Vaccination. A large number of heifers were vaccinated this present gestation period with a chloroform-killed bacillus. Last year the seventy heifers cited appeared to have given satisfactory results—a decrease in abortion and an increase in antibody, due, it was considered, to vaccination. This resulted in a larger experiment with 614 vaccinations and 174 controls.

Blood-samples have been examined from all these heifers, and almost all were negative. In one herd where several were already pregnant the bloods gave a positive reaction in a few cases, but the possibility existed that such animals were already in calf. This can be verified later. Fifty

samples taken at random at each vaccination showed that there was very little antibody formation in the heifers. Already there have been several abortions. Final figures will not be obtained till calving, but it is already evident that this method of vaccination is not a practical one. Antigen used was made exceptionally strong.

Sterility.

As regards sterility, we are very little further advanced. The Laboratory herd was carefully watched. Among the heifers four held to first service and three to second service. Because of calving injuries these heifers were held back longer than usual, making two of them December calvers. The older cows were slightly worse at holding than the heifers, but not as bad as in previous years.

Cervical flora in several of the cases investigated gave almost a pure growth of a hæmolytic streptococcus. This organism passed on to a maiden heifer, and a heifer served once, did not cause excessive inflammation. There was, however, a flushing of the cervix. In the case of one of the Laboratory cows an inflamed cervix gave an almost pure culture of hæmolytic streptococcus similar to others from outside herds.

A second suspicious organism isolated was a thin non-sporulating bacillus growing often in long filaments and occasionally almost in spirochæte formation. This organism has been found on several occasions, and when placed on the vagina and cervix of an experimental cow the original mucus caused a catarrhal vaginitis and some cervicitis. The œstral periods of this cow, however, were not altered. It seems, therefore, as though the filamentous organism might be responsible for acute catarrhal vaginitis. This same organism has been found in semen from bulls of the affected herd.

Specimens from cull-cow drives between March and June gave us no evidence of endometritis being a general lesion.

Tumours.

Fewer tumours were received this year compared with last—131-145. 104 of these consisted of growths known as epithelioma of the orbit, vulva, and glands, the remaining 27 comprising eleven different varieties.

General Specimens.

Cattle. A total of 142 specimens was received of bovine tissues. Of these, actinomycosis of head and udder gave a total of 13; ragwort-livers, 8; sterility specimens, 54. Three urine samples were received from cows which showed symptoms of eclampsia following calving. They were affected with albuminuria and glycosuria while kidneys were found acutely affected with parenchymatous nephritis.

Sheep. Specimens amounted to 258, many of these comprising cases of arthritis, pulpy kidney, and livers of sheep affected with *B. œdematiens.* All diseases under investigation.

Pigs. Specimens numbered 41; seven of these were from cases of pasteurellosis.

Other Stock. Of the remaining specimens, 57 were received from poultry, 12 from horses, 6 from dogs, 2 from goats.

Parasites.

A careful record has again been kept of parasites from domestic animals in order to be able to form an opinion of those present in New Zealand animals. All were classified and a record kept.

Experimental Work.

In this Section, Mr. Hopkirk gives a list of items of experimental work on one or other phase of a large number of diseases. In regard to oxalate poisoning we read that a thorough trial of feeding sheep and rabbits with sorrel was made. To compare lesions animals also received potassium oxalate and oxalic acid. This work had a bearing on the pulpy kidney question being investigated by Mr. Gill, and the results showed definitely that sorrel was in no way a cause of the pulpy kidney condition in lambs.

Concerning tæniasis of dogs, "It is usually recognised that *T. echinococcus* is rather difficult to remove from dogs, and a trial was made on two pups removed from their mother before they had received hard food. Both pups were fed on livers containing cysts of cysticercus tenuicollis and echinococcus polymorphus. A month after the final feed adult tænia segments were found in the fæces of the dogs. One pup was given kamala in tabloids, and then in powder form, followed by castor-oil, but no beneficial results were obtained. Liquid extract of filix mas was then tried, and the dog killed some hours later. A few dead *T. echinococcus* were found. The second pup was given a dose of ¼ grain arecoline hydrobromide in water per mouth. One hour later a very large number of live *T. echinococcus* were voided, together with two other tapeworms—*T. hydatigena.* The following day a further dose of arecoline was given, but no tænia were voided. No tænia were again seen in this dog, which was killed a few days later. *Post-mortem* examination showed the intestines to be quite free from parasites. Experimental work pointed, therefore, to the possibilities of filix mas in a dose of 1½ drams in treacle, with a dose of ⅛—¼ gr. arecoline hydrobromide some hours later, being an efficient tæniafuge."

An interesting reference to nutritional deficiency disease research is as follows: "A commencement was made at the end of the year on feeding pigs with minerals and vitamin B, in the form of yeast, to overcome paraplegia, so common in pigs fed with skim milk and sharps, etc. Decided improvement followed feeding with the mineral (calcium phosphate) and wood ash, plus cod-liver oil. Feeding with yeast in skimmed milk and pollard only has made the condition worse. Therefore vitamin was ruled out as a cause. This pig was then switched over to calcium phosphate and wood ashes, and within a week decided improvement was noted. Here again vitamin A was found to be of no use in curing the disease, but the cod-liver oil was probably useful in aiding mineral metabolism. Evidence pointed strongly to the condition being a mineral deficiency, and preventive work will be tried on these lines."

B.C.G. vaccine has been used on guinea-pigs, rabbits, and calves, but no thorough trial of immunity conferred has been made to date. One rabbit died of generalised tuberculosis when inoculated with virulent culture four months following vaccination. One vaccinated heifer given 4 milligrams bovine virulent culture intravenously began wasting, but later improved to some extent. Killed three months later, when only glands surrounding intravenous inoculation on right side, where some leakage had occurred, were affected. This animal would possibly have overcome the disease. No control was inoculated at the time. Further inoculation of animals has been awaiting the growth of suitable bovine cultures. Intradermal tests on vaccinated animals show a marked reaction. Calmette's eye test is in some cases not marked.

It is reported that during the year very great progress was made in connection with the braxy-like disease in sheep. The causative organism was found and identified as *B. œdematiens,* and a tentative reason given for the appearance of the lesions in the liver. Larval fluke appear to be the agent for transmission of the organism from the intestines to the liver; but it has as yet been impossible to prove this point experimentally, one reason being the difficulty experienced in getting cercariæ, another the extreme difficulty of passing fluke through snails in the Laboratory. An attempt is in progress to overcome these difficulties. A report on this subject appeared in the *Journal,* together with an article on the life history of fluke, through the native snail *Potamopyrgus antipodum* var. *zelandiæ.* Following this work, important educational instruction has been possible, and farmers in affected localities are commencing to clean up their farms with a view to eradicating fluke.

In continuation of the arthritis work commenced last year further experimental work (detailed) was undertaken.

The experiments suggest that the infection does not come from the ewe, but through the navel from the ground

upon which the lambs fall. A point noted in numerous lambs received during the season for arthritis, was the tendency of all diphtheroids to attack joints. The temporary lameness seen sometimes before and usually after docking of lambs appeared to come from a diphtheroid infection, chiefly of the hip joint, the diphtheroids in these cases being non-specific. Permanent arthritis might follow on from the specific organism, but seemed to be more prevalent on certain farms and not to be ubiquitous in sheep country.

Concerning so-called rye-grass staggers in horses, three varieties of rye-grass seed were fed to a horse, but nothing abnormal was noted. The condition has been so prevalent in the field this autumn in sheep, cattle, and horses that experimental work is under way to test out young rye-grass and ergot at certain stages of growth.

Royal Agricultural Society.

The following items are extracted from the report of the proceedings of a Council meeting of the Royal Agricultural Society held in the third week of last month :—

Veterinary Officials for the Harrogate Show.—The following were appointed veterinary officials for the Harrogate Show :—

Chief Veterinary Officer—Major Brennan DeVine.

Assistant Veterinary Officer—Mr. H. W. Dawes.

Veterinary Inspectors—Mr. C. J. Byner and Mr. F. L. Gooch.

The appointment of two further inspectors will be made at a later date.

Foot-and-mouth Disease Notification.—The Veterinary Committee reported that the following report had been received from the Society's representatives on the R.A.S.E. and N.F.U. Joint Committee appointed the previous month :—

A meeting was held on Wednesday, December 5th, 1928, of the Joint Committee appointed to consider what action could usefully be taken by the two Societies to endeavour to secure that adequate penalties should be inflicted by magistrates in cases of failure to report outbreaks of foot-and-mouth disease.

From letters before the meeting, it appeared unlikely that action would be taken either by the Ministry of Agriculture or the Home Office by way of direct communication to magistrates.

A general discussion took place, in the course of which reference was made to a number of cases where the offenders had either been let off or very small fines had been inflicted on them.

Eventually it was decided to ask Mr. German to draw up—for submission to the next meeting—a statement giving full particulars of, say, half-a-dozen cases in which owners of diseased animals had been convicted for failure to report the disease, and where the fines imposed were inadequate and ridiculous, and such failure to report had given rise to other outbreaks.

It is proposed then to ascertain the amount of the expenditure incurred by way of administration charges and compensation on account of these primary and secondary outbreaks, and to embody the whole of the facts in a letter to the London and country press, to be signed by the Presidents of the R.A.S.E. and the N.F.U.

Copies of the letter to the press, drafted by the Joint Committee, would be circulated to the members of the Veterinary Committee for their approval at the next meeting.

The Secretary had submitted a letter he had received from the Ministry of Agriculture, together with a statement of cases of foot-and-mouth disease in which compensation had been withheld, wholly or partly, by the Ministry.

The Committee estimated that for 1929 their expenditure would be £400, the amount of the grant to the Royal Veterinary College, plus the cost of the medals for proficiency in cattle pathology.

Distemper Investigation.—In moving the adoption of the report of the Veterinary Committee, Lord Mildmay of Flete said that he was " very keen that the Society should recognise what remarkable and admirable work had been accomplished, and successfully accomplished, by Dr. Laidlaw and Major Dunkin, who for a great number of years past had devoted all their energies to tackling the problem presented by dog distemper." . . . " The vaccine must be given by a veterinary surgeon, for without cleanliness and without effectively sterilised instruments and without competent scientific methods there was a great risk of failure."

The tribute was warmly endorsed by Lord Bledisloe, while the President (Lord Harlech) added that he was sure that they were very grateful to Lord Mildmay for all the trouble he had taken in the matter. His lordship had expressed his congratulations to the scientists on the body with which he was connected, but he (the President) thought that they ought to add their congratulations to Lord Mildmay himself as Chairman of that body. He only hoped that the successful discoveries with regard to distemper would be the forerunner of an equal success in regard to foot-and-mouth disease.

Research Work.—Speaking later in the meeting, Lord Bledisloe stated that veterinary research was going to form a very important feature, perhaps the leading feature, of the agricultural section of the British Association meeting in South Africa. A difficulty arose in connection with getting proper representation of British Veterinary Science at Cape Town and Pretoria, and particularly at the latter place, because there was to be a special session to consider that field of research. He was rather wondering whether, assuming that the British Association were prepared to make a grant, as he believed they were, towards the expenses of one of our more eminent veterinarians, a similar grant might possibly be made by the Royal to enable one of our best veterinary representatives to appear as an exponent of British veterinary work on that important occasion.

Quarantine Station.—In the course of his report, Sir Merrik Burrell (Chairman) said that since the Station opened, on April 4th, 1928, and up to November 10th, nine quarantine periods had been fixed. With the six goats entered for the tenth period to South Africa, and the seven head of cattle, sheep and pigs, now undergoing the eleventh period before export to South Africa, the total number of live stock to have passed through the Quarantine Station would be 334. Stock for the Irish Free State would occupy the Station for the twelfth period,

It had been reported by the agents for the Southern Rhodesian Government that 147 head of cattle would be purchased shortly for export to that Colony, *via* South

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Africa, and through the Quarantine Station, and these are expected to go forward during January—March. Other stock was also available for export to Northern Rhodesia and South Africa early next year, but further quarantine periods were not being arranged until it was known when the stock for Southern Rhodesia would be available.

The Secretary had read a communication from the Ministry of Agriculture recommending the appointment of an outside veterinary surgeon to attend sick animals at the Quarantine Station, as apart from the routine inspection duties of the Ministry's Inspector, and it had been agreed to appoint Mr. Percy S. Howard, M.R.C.V.S., of Wanstead.

Shire Horse Society.

At a recent meeting of the Council of the Shire Horse Society, Sir Walter Gilbey (president) presented the final details of the jubilee show, to be held at the Royal Agricultural Hall on February 19th, 20th and 21st next.

The schedule of 26 classes, with an aggregate value of £2,300 in cups, prizes and medals, was adopted. The four essential sections—stallions, mares, geldings and commercial horses—are fully recognised, with champion and challenge cups allotted to each division. The produce class for the best group of three animals by the same registered sire will be an instructive and interesting feature.

The veterinary officials at the Show will be :—Messrs. T. Eaton Jones (Liverpool) ; Charles Hartley (Lincoln) ; James G. Runciman (Cambridge) ; S. E. Sampson (Sheffield) ; and C. F. Shawcross (Altrincham).

The male section of the show will be judged on the first day, the mares and produce groups on the second day, with the awards of the championships on that afternoon. The sale by auction will be taken on the Thursday morning, with the entry of the first of the seven commercial classes into the ring in the afternoon. The offer of the president's two champion cups in the open and restricted yoked classes should, it is felt, stimulate competition and further strengthen the exhibition of the Shire horse working under commercial conditions.

The preparation of Vol. 50 of the Stud Book is well advanced, and the volume, with an entry of 274 stallions and 1,401 mares, should be issued with the jubilee history.

Foxhound and Sheepdog.

The contributor of "Hunting Notes" to *The Times* stated in that paper on December 10th :—

"A writer recently got into some trouble because he stated that a Sheepdog often did as much work in a day as a Foxhound. The subject under discussion was whether the heavy bone of the Foxhound, such as is needful to attract the eye of a judge at Peterborough, the cat-like, or rather club-like feet, are really necessary to assit the hound in his work. The writer claimed that the Sheepdog is the exact opposite of the fashionable Foxhound as regards conformation, and that he was capable of as much sustained effort as the Foxhound.

"To and from kennels and during a day's hunting a Foxhound can quite conceivably cover 50 or more miles, but many a Sheepdog does as much. Many a moorland shepherd will start at or before dawn to round up sheep from the utmost confines of a distant moor and then drive them to market many miles away. The Sheepdog on the road does not proceed at the leisurely pace of the Foxhound, but to keep his charges in hand gallops here and there, turning them out of side roads and so on. He is first at the head of the flock, then back to his master's heels a score of times in each mile covered. The total mileage in a Sheepdog's day will surely exceed that of any pack of hounds, and yet as regards make and shape he is all wrong according to Foxhound judges' ideas, who must have a hound with a heavy bone right down to his toes."

DIVISIONAL REPORT.

Lancashire Division.*

Meeting at Manchester.

A General Meeting of the Lancashire Division, N.V.M.A. was held at the Grand Hotel, Aytoun Street, Manchester, on Friday, November 2nd, 1928, at 3-30 p.m.

The Chair was taken by the President, Mr. H. H. Aldred, and the following members were present :—Messrs. H. T. Matthews, K. D. Downham, W. Kendrick, R. C. Locke, W. Tweed, D. E. Orr, J. O. Powley, E. J. Burndred, J. Holroyd, R. H. Oddy, J. B. Chadwick, J. Spruell, J. W. Ingram, J. Hall, E. H. Curbishley, A. W. Noel Pillers, H. A. Heggarty, G. Mayall, W. Woods, Professor Gaiger, Mr. J. K. Bateman and Colonel Brittlebank.

Visitors.—Messrs. L. Wilkinson and D. E. Wilkinson.

Apologies for unavoidable absence were received from Messrs. J. H. Wright, R. Hughes, J. H. Carter, P. Manuel, H. L. Torrance, G. Hutchinson, G. H. Locke, H. Holroyd, sen., T. Eaton Jones, P. T. Lindsay, J. H. White, T. A. Dobie and T. Dobie.

The minutes of the previous meeting, as published in the *Veterinary Record*, were taken as read.

Correspondence.

(1) From Mr. G. Hutchinson, of Poulton-le-Fylde, tendering his resignation as a member of the Division. The Secretary stated he had sent a letter to Mr. Hutchinson asking him to reconsider the matter, and he had not received a reply. It was unanimously resolved that the matter be adjourned until the next meeting.

(2) From the Secretary of the N.V.M.A., with regard to a scheme for providing treatment for sick animals of the poor. It was agreed that this matter be considered by the Council.

(3) From the Secretary of the National Horse Association of Great Britain, stating the objects of the Association, the various campaigns that they had conducted, and inviting the "Lancashire" to become an affiliated Society. This matter also was referred to the Council.

Nomination and Elections to Membership.

Mr. J. R. Rigby was nominated for membership of the Division and Messrs. J. K. Shaw, Wallasey, and Mr. J. B. McLean, Malpas, were elected as Members.

In calling upon Mr. Wilkinson to give his paper on "Secondary Lameness," the President said it gave him particular pleasure to welcome Mr.Wilkinson to Manchester. He was an old friend and they last met thirty years ago. [Mr. Wilkinson's paper is published, with report of discussion, elsewhere in this issue.—Ed.]

Mr. Woods proposed a vote of thanks to Mr. Wilkinson, Professor Gaiger seconding. The motion was carried with acclamation.

Pathological Specimens.

Mr. Bateman exhibited an interesting specimen of the penis of a bull, which had sloughed completely off, the cause being obscure.

Mr. Wilkinson exhibited two horse shoes, one which prevented the brushing of the hind feet, and the other from a horse with a badly-contracted foot, referred to in his paper.

The meeting concluded with a vote of thanks to the President, which was heartily carried.

John Spruell, *Hon. Secretary.*

* Received on 3rd December.

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Jan. 14th—Meeting of the Editorial Committee, N.V.M.A., 10 Gray's Inn Square, W.C.

Jan. 16th—Annual General Meeting and Dinner of the South Eastern Division, N.V.M.A., at Tunbridge Wells.

Feb. 8th—Business Meeting and Annual Dinner of the Midland Counties' Division, N.V.M.A., at the Grand Hotel, Birmingham.

Number of Veterinary Surgeons in Germany.

According to official statistics published by the State Health Office, there were in Germany on the 1st July, 1927, 7,600 veterinary surgeons, as against 7,562 on the 1st July, 1926.

They are divided as follows, according to their office :—

	1927	1926
State officers	1,089	1,099
Teaching staff	143	143
Army	203	203
Directors and Inspectors of Abattoirs	871	850
Private practitioners ...	5,049	5,048
Research workers	245	220

The figures concerning Directors and Inspectors of Abattoirs apply to veterinary surgeons specialising in this work. Besides these, however, 5,511 veterinary surgeons (*i.e.*, 72.5 per cent.) took part in meat inspection work in 1927, as against 5,490 in 1926.

Of the 871 veterinary surgeons employed in abattoirs, 16 occupy the office of Director.—*Revue Gén de. Méd. Vét.*, Dec. 1928.

. . . . . .

Number of Veterinary Surgeons in Switzerland.

The number of veterinary surgeons in Switzerland on the 1st November, 1927, was 696, *i.e.*, 41 more than at the time of the last-published list.—*Berliner Tierärztliche Wochenschrift*, 28th December, 1928.

R.C.V.S. Obituary.

Siddall, E. W. Neild, 17 Westbourne Avenue, Rhyl, N. Wales. Graduated, N. Edinburgh, 13th April, 1887. Died, 25th December, 1928, aged 63.

R.C.V.S. Library.

The undermentioned additions have recently been made to the Library of the R.C.V.S. :—

Proceedings of the Cancer Conference, London, 1928 ; " Festkrift til Bernhard Bang," 1928 ; *The Pig Breeders' Annual*, 1928-9 ; " Ophthalmologie Veterinaire," Nicolas, 2nd edition 1928 ; * " Borna Disease and Enzootic Encephalo-Myelitis of Sheep and Cattle," Nicolau and Galloway, M.R.C. 1928 ; " Restraint of Domestic Animals," White, 1909 ; " The Pathology and Differential Diagnosis of Infectious Diseases of Animals," Moore, 1902 ; Ministry of Agriculture.— *Annual Report of Proceedings under the Contagious Diseases of Animals Acts*, 1927.

* pamphlet.

Any of the above-mentioned works may be borrowed from the Library by members of the College on payment of postage both ways. Applications should be made to the Librarian, R.C.V.S., 10 Red Lion Square, London, W.C.1.

Personal.

Colonial Appointments.—Among the appointments announced as having been made by the Secretary of State for the Colonies during December, 1928, is that of Mr. E. Messervy, M.R.C.V.S. as Veterinary Officer, Tanganyika Territory.

A Return to Horses.

Growing Demand for Ponies in London.

A correspondent writes to *The Times* of Monday last :—

" Major N. Thompson, on his re-election as president of the Kington (Herefordshire) Shire Horse Society, expressed the opinion that the horse is slowly coming into his own again. This is especially encouraging, as it shows that the revival is a steady one and is gradually increasing all over the country. Major Thompson pointed out that there is a great future for the pony and had much to say about the demand for them in London.

" There was much talk in well-informed circles about the pony during the later weeks of last show season. At shows held in districts within touch of the Mountain and Moorland pony breeds it was very evident that pony breeders were looking forward to a better time. The prices in London have gone up a good deal and ponies are now selling at from 30 to 60 guineas each. Unfortunately much of this does not get to the breeders and Major Thompson said that Herefordshire breeders were getting from 10s. to £1 for young ponies. Surely this shows a considerable lack of organisation on the part of breeders. With an increased demand for ponies, which are excellent at all quick work where there is a scarcity of room, the Pony Society should be a great assistance to breeders in this direction."

New Greyhound Club Steward. Professor F. T. G. Hobday, principal of the Royal Veterinary College, has been appointed a Steward of the National Greyhound Racing Club in place of Lord Loch, who recently resigned.

Army Veterinary Service.

London Gazette—War Office—Regular Army.

Jan. 4.—*Half-yearly Brevets.* The follg. promotion is made (Jan. 1) : to be Bt. Lt.-Col., Maj. A. Leaning, D.S.O.

" The Significance of Zoology in Veterinary Science."

At the twenty-sixth annual meeting of the South African Association for the Advancement of Science, held at Kimberley, on June 29th—July 4th, 1928, under the presidency of Sir J. Carruthers Beattie, the president of Section D, Professor P. J. du Toit, spoke of " The Significance of Zoology in Veterinary Science." The early history of veterinary science dated to 4,000 years ago, but modern science began in the eighteenth century. Outstanding discoveries of the late nineteenth century were those of the trypanosome causing surra, and of the babesia responsible for redwater in cattle. These illustrated how veterinarians seeking the cause of disease had to focus their attention on the microscopic and invertebrate world. The study slowly emerged from empiricism and gradually began to embrace biology as a whole. The protozoa as disease excitants had led to intensive study of the group, accompanied at first by the creation of numerous species, now reclassified under relatively few names, the rest being synonyms. The characters of these standard forms and their synonyms were given. The piroplasms were similarly considered. Among the metazoa, the veterinarian and zoologist have common ground in the study of the cestoda of domestic stock and in the search for intermediate hosts of other parasitic worms. For the determination of such

life histories a good knowledge of zoology is essential. A necessary part of the equipment of every veterinarian is a knowledge of the systematics, anatomy, and biology of insects, mites, and ticks. In no group was the common interest of veterinarian and zoologist more clear than in the vertebrates. Anatomy, physiology, and embryology all demanded the comparative method of study for the best results. Many species of mammals were carriers of organisms pathogenic to domestic animals. The diseases of birds are assuming greater importance yearly, as are those of fish. In veterinary education in South Africa an attempt has been made to break away from the more stereotyped course of the older schools and to give to the students the broad scientific bases necessary. Special courses in protozoology, entomology, and helminthology have been instituted. It is hoped that adequate recognition of the value of zoology will enable the younger generation of veterinarians to maintain a leading position for South Africa in veterinary science.

U.S. Army Horses and Mules.

The latest figures on the animal census of the United States Army indicate that there are at present 48,391 horses and mules on active duty throughout the service. These animals include the following classification: Horses: draft, 11,919; riding, 22,372; pack, 498; total, 34,789. Mules: draft, 10,905; pack, 2,697; total, 13,602.

The Field Artillery leads with 10,079, with the Cavalry second with 9,850. The Chemical Warfare Service has the smallest assignment of animals, with a total of 34. The National Guard comes in for a large number, with a total of 10,198.

The comparison of the average prices paid for the different classes of horses and mules for the fiscal year 1928 with those of the fiscal year 1927 shows a decrease in the Government cost of mules of about $15 to $19 per animal.

Since July, 1924, 14,886 animals have been purchased by the Army. The Remount Purchasing Agent, Fort Reno, Oklahoma, leads all others with a total of 5,236 animals purchased since 1924. Kansas City is next with 2,882.—*Army and Navy Journal.*

Women Judges.

The presence of women in the judging rings at shows is not now a novelty, but the absence of men in cases of double judging is unusual. At a local Clydesdale foal show in Fifeshire recently, two women awarded the prizes and, to add further interest to the case, the judges were twin sisters. They were the daughters of Mr. Robert Park, Brunstane, Portobello, Edinburgh, one of the leading owners and judges of Clydesdale horses in his time, as his father was before him. It appears that the young women acquitted themselves with distinction in a task of no little difficulty.—*The Times.*

H.M. Stationery Office Publications.

The undermentioned have been published recently. Copies can be purchased through any bookseller, or directly from H.M. Stationery Office, at the following addresses:—London: Adastral House, Kingsway, W.C.2, and 28 Abingdon Street, S.W.1; Cardiff: 1 St. Andrew's Crescent; Manchester: York Street; Edinburgh: 120 George Street.

	Price Net.		*Post. Free*	
	s.	d.	s.	d.
COMMAND PAPERS.				
3235. Malaya. Ceylon and Java; Report by the Rt. Hon. W. G. A. Ormsby-Gore, M.P., (Parliamentary Under Secretary of State for the Colonies), on his visit to, during the year 1928	4	6	4	9
MINISTRY OF AGRICULTURE.				
Journal, Volume XXXV No. 10, January, 1929 (24-0099-01-29) ...	0	6	—	

As Great Britain produces only about 42 per cent. of her pig-meat requirements, and in 1927 imported £47,000,000 worth of pigs and pig products, it is a safe policy to breed and feed more pigs. Farmers (says the Irish Department of Agriculture) should accordingly maintain breeding sows at full strength, as the prospects of the trade are now good, and likely to be better in the immediate future.

CORRESPONDENCE.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents

The Economics of the Horse and the Thoroughbred Horse.

To the Editor of The Veterinary Record.

Sir,—During the discussion of Sir John Moore's paper "The Economics of the Horse" at the Congress of the N.V.M.A. at Newcastle-on-Tyne, in September of last year, Mr. MacNeilage (Secretary of the Clydesdale Horse Society and editor of the *Scottish Farmer*, Glasgow) is reported, in *The Veterinary Record* of October 6th, 1928, to have said: "With regard to the light horse breeds, we are told that the horse racing business in this country contributes immensely to the improvement of the horse. I want to ask the question: Can the race horse contribute to the improvement of the horse, when such a horse is trained to run a race that lasts for about three minutes? If it is an arguable proposition, I should like you to discuss it. For the life of me I cannot see that a race that lasts only three minutes can indicate that such a horse is a good one or a bad one. The horse that runs so well might be a "roarer." One of the greatest of these horses was a "roarer" (Ormonde), and another was a hopeless "shiverer" (Eclipse). What is the use of that? It does not matter if a horse is winning any number of such races lasting three minutes, because I do not think that such a horse contributes anything to the credit of any breed. I think the first essential point in any horse is not its shape but its soundness. The best shaped horse that ever lived was a bad one. How are you going to improve the breed of horses by using unsound animals?" '(Applause.)'

Mr. John Davidson (Newcastle) was the only speaker to refer to Mr. MacNeilage's remarks, as follows:—"I believe in soundness in horses, and Mr. MacNeilage made some good remarks on that very point."

I was rather surprised that no one present had anything to say with regard to the position of the thoroughbred horse in this country. No horse is perfect, and therefore no breed can be. The breeders of race horses take every precaution to breed from the very soundest stock; it would not pay them to do otherwise. The proprietor of a "roaring" stallion would to-day find his patronage very limited. True, Ormonde was a "roarer," but he did not develop this infirmity until the end of his three-year-old days. As a four-year-old, he put in some of his best performances and remained, as we all know, undefeated.

The fact that the best class of present-day race horses can do what they do in the times, and carrying the weights, they do is nothing short of marvellous. How else can a breed of light horses be tested, but by being ridden under the most searching conditions?

It must be borne in mind that many race horses have finished their active careers and are at the stud at an age when animals of other breeds have not yet been broken, much less put to work. The races that "take three minutes"—and by this it is presumed Mr. MacNeilage referred to the Classics, in distance from one mile to just over one-and-three-quarter miles—are most searching tests for three-year colts and fillies, who carry 9st. and 8st. 11lbs. respectively on their backs.

Reverting to the question of soundness, Ormonde did not get much progeny in this country, and was sold to go

to the Argentine Republic, whence he was re-sold, and went to the U.S.A.

Is it likely that breeders in this country would have allowed such an animal to leave the country had he been sound? Amongst the stock got by Ormonde in England was Orme, a great horse and a sound one, who in turn begot Flying Fox, a winner of "The Triple Crown," and Orby, a Derby winner, who in turn sired a worthy son of this noble line in Grand Parade.

I am a lover of all horses and take an interest in the history and breeding records of not only horses but all livestock.

It would interest me to know where Mr. MacNeilage has obtained the information that Eclipse was a "shiverer." If he can substantiate his assertion he will have indeed contributed to the History of the Turf. Be that as it may, the descendants of Eclipse constitute by far the greater number of the highest class race horse "running" and "sire" families of the present day.

Are these animals more unsound than any other breed of horse?

Under The Light Horse Breeding scheme a large number of premiums are offered yearly to breeders for thoroughbred stallions to serve mares all over the country. All these stallions have to be sound and have to pass a rigid examination prior to appearing at The Hunters' Improvement Society Show at Islington. I saw one hundred of these stallions last Spring, nearly all of which had been in training and some of them had won good races. All the premiums, with one exception, had been awarded, and a finer lot of animals it is hard to imagine. These horses have therefore passed no less than three tests before they are allowed to serve mares: the test for performances; the test of veterinary examination for soundness; and the test of inspection by the judges.

Mr. MacNeilage states "The best-shaped horse that ever lived was a bad one." Was he a Clydesdale? Perhaps so: I would like to know. If he was a race-horse I should like also to know. Who in the world, or out of it, is capable of expressing the opinion that any one animal was the best-shaped one that ever lived?—Yours faithfully,

H. E. IRWIN (Major).

Tenterden,
Kent,
22nd December, 1928.

Swine Fever.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—As you say in your leader of 8th December, 1928, Mr. Noel Pillers' contribution in the *Veterinary Record* of the same date is timely, refreshing and stimulating, and should call forth a lively discussion. Amongst others, it should at least invoke the assistance of the experts of the Ministry of Agriculture and Fisheries in helping us to define swine fever. I agree that great benefit would be derived from an official statement as to the method of diagnosis, but of course the final decision rests with them.

I differ, however, as to the statement that "when four out of five cases are not confirmed there would appear to be room for considerable research and consequent improvement," as will be seen from the method of notification, which is:—An owner has a pig or pigs which are unthrifty, and one dies—he notifies the police—police notify Ministry—Ministry notify veterinary inspector.

Very often, in my experience, if a pig dies from *any* cause it is reported to the police, and it is therefore counted as a notification, although on *post-mortem* the cause of death is at any rate not swine fever.

There has not, up to date, been any "lively discussion," but there has been an exceptionally good paper, presented to the North Midland Division by Mr. Walker, published in the issue of the *Record* 22nd December, 1928, which I studied with great interest.

In one part of his paper dealing with "skin lesions," he remarks: "There is, however, *one well-defined lesion* of the skin which I think is *only seen in swine fever*" (the italics are mine) "*viz.*, punctiform and petechial hæmorrhages situated on the abdomen, inside the thighs, hocks and axilla."

To me, at any rate, this is not a well-defined lesion, as I have only seen it in one outbreak, which I venture to think was not swine fever, and which I will describe later.

Leaving for a moment "swine fever," I turn to Sir John Moore's presidential address to the Section of Comparative Medicine of the Royal Society of Medicine (Oct. 24th, 1928), where he asks the question—to which he can get no definite reply:—"Is there any hæmorrhagic septicæmia in this country?"

Perhaps—I only say perhaps, because pigs are pigs, and swine fever is swine fever—but the undermentioned cases may throw some light on that question.

Some years ago I was called to a piggery which contained seven breeding sows. These pigs were in exceptionally good condition, and they also showed some exceptional symptoms, both *ante-* and *post-mortem*.

Ante-mortem symptoms. Temperature 108° F.; off feed; somnolent; obstinate constipation, which continued until death; what little fæces were passed were covered with blood, and blood clots passed independently of fæces; urine abundant, blood-coloured, and clots of blood passed with it; bloody discharge from the nose; respiration quiet; no skin symptoms until just before death, when abdomen, thighs, and axilla suddenly became covered with punctiform and petechial hæmorrhages. (See Walker, as previously mentioned.)

Post-mortem appearances. On cutting through the skin, fat, and abdominal muscles, small hæmorrhages were seen to be freely scattered through their substance. A small amount of sanguineous fluid was found in the abdominal cavity; hæmorrhages were abundant under both visceral and abdominal peritoneum; liver fatty; spleen normal in appearance, but showing hæmorrhages under capsule. In the kidneys large areas were hæmorrhagic and pulpy, with a large hæmorrhage under the capsule. A large hæmorrhage and a large area of gelatinous exudate were present in the sub-lumbar region.

On opening up the bowels, pellets of fæces, hard, and covered with a very viscous sanguineous exudate (dried blood and mucus) were found, closely adherent to the mucous membrane. On washing off this exudate the chief morbid appearances were the presence of large and small hæmorrhages under the mucous membrane.

The pleural cavity showed hæmorrhages under the pleura and the lungs exhibited slight lobular pneumonia, and were studded with hæmorrhages, both under the pleura and in the substance. There was about a cupful of sanguineous exudate in the chest cavity.

The heart showed hæmorrhages under both epi- and endocardium, especially the latter. The lymphatics were so hæmorrhagic that they appeared to be simply a blood clot.

Three of the sows died and the owner destroyed one. On the death of the third sow, I happened to be present and immediately eviscerated the carcase and took the viscera to a well-known university, where an eminent pathologist (Professor Walker Hall) undertook the examination. His preliminary report was:—

"I quite agree that the morbid-anatomy changes are not those of swine fever. The intestinal changes are nil, and the only outstanding features are the widespread small and large hæmorrhages indicative of septicæmia.

"It is a little early to send you any report, but I thought you might like to know that from the blood I have so far obtained a streptococcus, or strepto-bacillus, and gram *negative* organisms which fulfil the preliminary tests for one of the hæmorrhagic septicæmia group of organisms. So far, I have been able to exclude anthrax."

Second Report.

"The bacteriological findings are as follows:—from the blood and spleen the cultures have yielded

"1. Gram-positive diplococci, morphologically resembling pneumococci. The organism presents the appearances of the pneumococcus on various media; it ferments insulin, and is bile-soluble and definitely ærobic.

"2. Gram-negative *non-motile* bacilli; with stains this organism shows bi-polar appearances; it grows well in peptone and produces indol; it does not grow well on ordinary solid media, but grows profusely when blood is added; it fails to ferment glucose, mannite and lactose. I place it in the group of hæmorrhagic septicæmia organisms. In this outbreak I feel that it is a mixed infection of pneumococcus and hæmorrhagic septicæmia organisms."

Now, leaving out any consideration of the filterable virus of swine fever, the secondary infections are usually those of the *B. suipestifer, which is motile* and which was not present in these finds, and *B. suisepticus*.

The three remaining sows became affected and were treated by a vaccine prepared for me from the two organisms present by Professor Walker-Hall.

Fifty million organisms of each emulsion of the pneumococcus and hæmorrhagic septicæmia organisms diluted with normal saline solution were given as a first dose. This dose was doubled on two subsequent injections. The sows recovered.

All these symptoms are those usually ascribed to the secondary infections let loose by the action of the filterable virus, but in my study of "swine fever" or hog cholera I have not yet seen mention of a pneumococcus—*B. suisepticus*, certainly, as causing the lung symptoms, not a pneumococcus.

As I mentioned previously, swine fever *is* swine fever, and the more I study this disease the further I get from a positive diagnosis. All these bacilli seem to be present in the pig as a "normal habitant," and this elusive filterable virus, which causes swine fever, sets free every bacterial disease under the sun, but Mr. J. S. Lloyd (*Veterinary Record*, 22nd Dec., 1928) postulates the theory that "until ulceration was found the Ministry would not definitely confirm swine fever," yet the cause of the ulceration is only one of the secondary invaders.

You have hæmorrhagic septicæmia, swine plague, diphtheria, paratyphoid, which can all occur separately, yet text books say that as far as swine are concerned none of these must be classed as a separate disease, but all as diseases secondary to swine fever caused by a filterable virus.

Still (referring to text books) even the *B. suipestifer* is not always found in true hog cholera—one investigator only finds it in 76 out of 178 cases, while in other cases are found seven so-called varieties of this organism, thrice the paratyphus A group, once the *B. enteriditis Gærtner*, 50 times the *B. pyocyaneus*, 36 times streptococci and 27 times staphylococci, 160 times colon bacilli, whilst in 14 cases the organs proved sterile. Then there is the *B. paratyphus B.* and *B. botulinus*.

Yet it is all so simple. Swine fever *occurs* in pigs of all ages, but mostly in growing or adult animals,—*bacterial findings*: primary cause filterable virus; secondary, *B. suisepticus*, and *B. suipestifer*; *skin lesions*: hæmorrhages; *subcutaneous tissue*: hæmorrhages; *lungs*: hyperæmic with hæmorrhages or hæmorrhagic croupous inflammation; *digestive tract*: diphtheroid deposits in the throat and stomach; *in intestine*: diffused necrosis, follicular ulcertations, button ulcers; *lymph glands*: hæmorrhagic swellings; *generally*: hæmorrhages numerous and extensive. *These are the principal signs, and even they may not always be present.*—Yours faithfully, J. W. HALL MASHETER.

The Paddocks,
Newnham-on-Severn,
31*st December*, 1928.

Poultry, Rabbit and Fur Farming.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—The poultry industry of this country for the year 1927 was estimated wholesale at some £51,000,000, of which about £26,000,000 was expended wholesale for imported eggs and poultry. The veterinary profession caters very little if at all for the support of such wealth, and therefore it loses revenue.

It is the same with rabbit farming for wool, pelt or meat. Some rabbitries are of more value than a flock of sheep. They are growing up all over the country, especially as the wild fur animals are decreasing in their native countries. The breeding in confinement of wild animals such as the silver fox, muskrat, skunk and racoon is extensively carried out in the U.S.A., Canada, and some Continental countries, and it is just beginning to be taken up here, especially in Scotland and the south-west of England. Certain districts are suitable for this kind of farming, and it might be pursued as a side line to general farming. It will, no doubt grow extensively in time. These animals have disease, like other species, and their owners often require expert assistance.

These branches of animal industry should be catered for by the younger generation of the profession. They are especially suitable for the care and skill of the woman veterinary practitioner. I opine that the day is not far distant when every county council will employ a small animal veterinary practitioner to advise the local poultry or rabbit farmer when in trouble with his stock.

Who would make a more suitable instructor in poultry hygiene and disease than a highly-trained woman veterinary surgeon? This should be the province of a veterinary surgeon—rather of one who has a smattering of various poultry matters than a profound knowledge of one or more subjects.

Those of the profession who have any influence with county councils should put forward the claims of veterinary surgeons suitable, by knowledge, temperament and taste, for the work. This is a subject that might very well be taken up and considered by the N.V.M.A. We are looked upon as the custodians of the animal health of these islands, and we should always be on the alert to fill up any lacuna that might arise in this direction. If we do not assert our claims or expose our worthiness how can we expect the community to appreciate us at our true value? I believe in the practice of the business man, who is always on the look out for vacua, which he endeavours to fill. In fact, he creates a demand. The public do not set the fashion; that is set by the one who creates the demand by show, demonstration, advertisement or propaganda. If the public see the worth of a thing they make a demand for it. Still, we are not without showmen. It is no use resting on the past, we want to look ahead.—Yours faithfully,

HENRY GRAY.

The History of Veterinary Science.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—In his letter published in the *Veterinary Record* of to-day, I am very much indebted to Dr. Bullock for indicating a slip in my opening of Mr. Masson's paper on the above subject. My reference should have read: "letters patent of King John of France," and not "letters patent of King John."—Yours faithfully, S. J. MOTTON.

Penzance.
January 5th, 1929.

The Editor acknowledges the receipt of the following:—Communications from Messrs. R. L. Higgins (Hersham), J. P. Isherwood (Blyth), E. W. Morris (Uckfield). Captain A. W. Noel Pillers (Liverpool), and Mr. Kevin F. Quin (London).